news • developments • research • significant articles • statistics • personalities • features

The Northwestern Miller

MILLING PRODUCTION SECTION

IN TWO SECTIONS—SECTION TWO

MARCH 11, 1942

Thiamin Retention in Self-Rising Flour Biscuits 3a

An Incomplete Flow Sheet 4a

Facts About Corn As a Fuel 4a

A Miller Looks Back 6a

Products of Milling Operations—Part Three 8a

The Adventures of C. G. Beetlebug 10a

The Gelatinization of Starch 12a

Cake Flour and Granulation 14a

Modern Power Transmission 16a

Production Highlights

DEFERRING.—No matter how essential their services may be, general deferment of any class of men such as mill employees is not authorized by law, states the Millers National Federation. Independent cases, therefore, are in the hands of local draft boards or higher appeal bodies. Three interdependent conditions affect occupational deferment: the job itself and its importance to national welfare; the difficulty of replacement; and loss of effectiveness a man's removal might cause.

INCREASING.—A gain in flour output for 1941 amounting to approximately 3% is shown in a Bureau of the Census report, data for which comes from mills that produced 95.4% of the wheat flour manufactured in 1939. The present figures supplied by them total 105,992,210 bbls of flour and 4,165,758 tons of millfeed for 1941, compared with 102,994,400 bbls and 4,074,748 tons the previous year. On the average, 273 lbs of wheat were required to make a barrel of flour in 1941—an amount equal to that needed the year before. Mills reporting for the past year had a combined average daily capacity of 579,657 bbls, compared with 591,491 in 1940. October was the month of largest production.

WARNING.—The Millers National Federation is cautioning millers against a form being sent mills by a large cracker manufacturer. This contains an indemnity agreement by which any bag damaged at the mill, regardless of its condition when received, must be replaced by a new bag.

PROPOSING.—A bill recently introduced in the legislature of South Carolina would require the enrichment of all white flour or bread manufactured and sold in the state. Receiving forthright endorsement by the National Nutrition Council, the measure reflects active cognizance of facts brought out last month by Dr. Robert R. Williams, the man who isolated Vitamin B_1 and who has since played an important role in its promotion in the nutritional field. Upon his return from a tour during which he made observations of nutrition consciousness in a cross-section of the public, Dr. Williams reported that most people do not recognize the merits of the enrichment program. In brief, food purchasers do not demand enrichment, and this often gives unenriched products a competitive advantage. He stated that the enrichment of flour and bread would cost, per person per year, from 40 to 150 times less than would the daily consumption of any single "recommended" food, such as a glass of milk or an orange a day, and he hinted that since Dec. 7, the government had been considering compulsory enrichment as the most practical means to bring wide benefits to the public. . . . Although taking no official position in connection with the South Carolina proposal, a Federal Security Agency spokesman described the step as evidence that the nutritional plan was taking effect. . . . At the time of the bill's introduction, it was believed its passing might be delayed to allow for increased education about enrichment. . . . In the meantime, the Millers National Federation, commenting upon compulsory enrichment as a nation-wide possibility, stated that, to be workable, a pattern must be established by federal action, with supplementary state laws as needed. The federation bulletin revealed that many millers are in favor of such a step because they feel that competitive difficulties under the present set-up are a principal deterrent to the program.

STUDYING.—Twenty to twenty-five percent of the flour sold through the food stamp program is enriched, according to a recent survey. From August through November, 1941, 893,000 bbls of all types of flour were estimated to have been marketed under the scheme. . . . Describing flour as one of the most important single foods for low income families, the Surplus Marketing Administration stated that about 14% of the blue stamps distributed were used for its purchase.

SUBSTITUTING.—Not that there is a priority of rice for use at weddings: it was simply more fitting that Elmer Modeer, manager of the St. Joseph Testing Laboratories, and his bride should be pelted with wheat. Married last month, their car was well dotted inside and out with the grain so familiar to the bridegroom. (A bit of rice was thrown in for good measure.)

BAKING.—Slating the product for use in the baking of cakes and pastry, the Quartermaster General of the U. S. Army last month authorized the purchase of soft wheat flour for company kitchens.

PROHIBITING.—Effective March 1, the use of tin cans for the packaging of such commodities as flour, cereals, baking powder and spaghetti was prohibited by the War Production Board.

PASTING.—Requesting that adhesive tape, which contains certain essential materials, not be used to help prevent the shattering of windows from bomb blasts, the War Production Board recently suggested the substitution of strips made from old bed sheeting or cheap muslin. Flour paste would make them stick.

V

Waste Cannot Be Tolerated!

it is neither patriotic nor profitable to permit flour to become contaminated by insects.

KEEP 'EM TURNING!

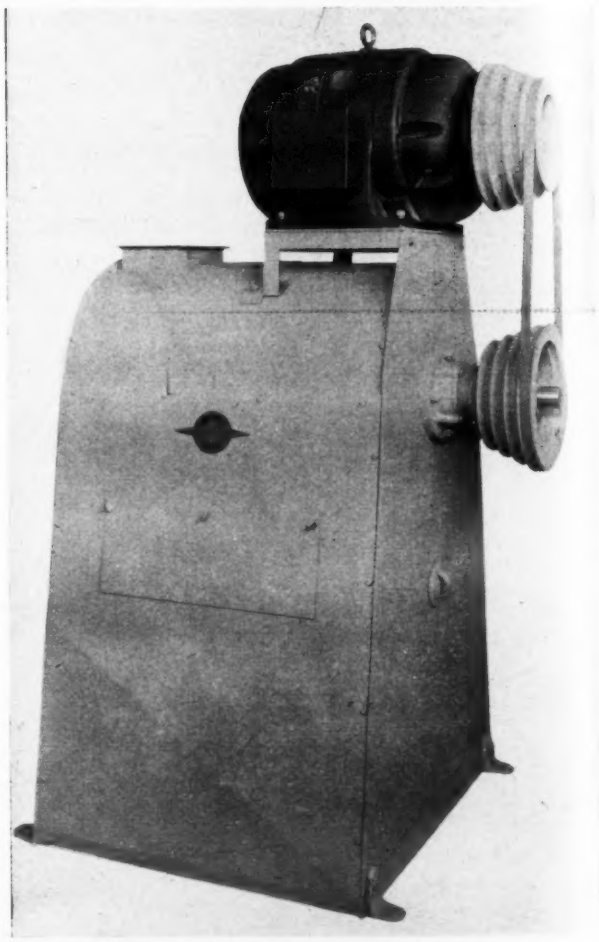
Such flour will be seized and condemned—lost to the manufacturer and to human beings who will need it.

AVOID INSECT CONTAMINATION BY STOPPING INSECT INFESTATION BEFORE IT STARTS. TREAT ALL FLOUR WITH THE FORSTER INSURATOR!

Wheat flour has for centuries been one of the purest of foods. It is not less so today than in the past. Yet it is well known that it is not uncommon to find live insects inhabiting stored flour which was manufactured under conditions that seemed to leave nothing undone to avoid insect infestation in the mill. *Insect contamination is the result of insect habitation,* and *all the insects inhabiting flour were hatched from eggs.*

An insect egg that has been sterilized will never produce an insect, and it is harmless in every way. There is a way to produce sterility easily and without risk of injury to the delicate flour particles. The FORSTER INSURATOR offers that way. Economical to own and use, the FORSTER INSURATOR enables the miller to do what he has always wanted to do: produce flour absolutely free from insect life. It is a tremendous builder—and retainer—of good will.

Write for Bulletin



Motor Driven FORSTER INSURATOR

FORSTER MACHINES ARE USED AROUND THE WORLD!

The FORSTER MANUFACTURING CO., Inc.

WICHITA, KANSAS, U. S. A.

REPRESENTATIVES: Central States, St. Louis Mill Equipment Co., 1025 N. 6th St., St. Louis, Mo. • • Southeastern, J. D. Ferguson, 1048 Laurel Ave., Bowling Green, Ky. Northwest, R. J. S. Carter, 1219 Flour Exchange, Minneapolis, Minn. • Canada, Strong-Scott Mfg. Co., Ltd., Winnipeg, Man., and Toronto, Ont. • California, C. M. Fraenkel, 461 Market St., San Francisco. • • Great Britain, Holland, France, Sweden, the Argentine and Australia, Henry Simon, Ltd., Cheadle Heath, Stockport, England.

GRAIN SCOURERS ★ WHEAT CONDITIONERS and WASHERS ★ DUSTERS ★ FINISHERS ★ SEPARATORS ★ HAMMER MILLS ★ FEED MILL MACHINERY

Is it practical to produce *enriched* self-rising flour? Of course it is! But with the introduction of the flour enrichment program came rumors that, principally because of an alkaline condition in the dough, large amounts of vitamin B_1 were lost in the baking of biscuits. There were neither data to support nor disprove this contention. Now comes a report of a wide program of investigation. It demonstrates that thiamin retention is influenced by an easily-controlled factor—the pH of the dough. The material is reprinted here from the January issue of *Cereal Chemistry*.

Thiamin Retention in Self-Rising Flour Biscuits

By R. A. Barackman

PUBLISHED information on thiamin retention in "baking powder" products is so scarce that systematic investigation is justified. Copping and Roscoe (1937) found no demonstrable amount of vitamin B_1 remaining in bread, as indicated by the rat-growth method, when baking powder was used in place of yeast. Their "baking powder" bread consisted of flour mixed with 1.25% salt, 1.51% calcium acid phosphate, and 1.07% sodium bicarbonate. The dough was baked at once for 45 minutes at 450-480° F. They cited the fact that Kent-Jones reported a similar dough as having a pH of 6.7-7.2, whereas yeast dough registered 5.5-5.9. Copping and Roscoe attributed the destruction of vitamin B_1 to its exposure to a mildly alkaline medium at a temperature of 100° C. for a relatively long time.

It is well known that thiamin shows considerable resistance to heat in an acid or slightly acid medium. Exposure to temperature of 100° C. in these conditions causes little, if any, loss. However, in an alkaline medium there is extensive destruction, even at low temperatures. As self-rising flours produce biscuits slightly on the alkaline side of neutrality, and baking time is relatively short, it might be expected that destruction of thiamin would be relatively small. The work reported here is a study of factors which affect the survival of thiamin in self-rising flour biscuits. Experiments were limited to the use of one flour. In order that they might be applicable to any flour, the tests involved the determination of the amount of added synthetic vitamin, thiamin hydrochloride, which is recovered in the baked biscuit irrespective of native thiamin. The thiochrome method of assay for thiamin was used throughout.

Self-rising flour and biscuits were prepared from a commercially milled, bleached flour of about 60% extraction. To a weighed portion of self-rising flour was added 12% (flour basis) of hydrogenated shortening, which was mixed in by hand. Water or milk was added and the dough was mixed by machine. It was rolled out, cut and panned with the dough pieces in contact with each other in a round pan. Baking was done on the rotary shelf of an electric oven at 450° F; water biscuits were baked for 15 minutes, milk biscuits for 12 minutes. Upon removal, the biscuits were cooled, broken into small pieces, air-dried to constant weight, and ground through a food chopper.

Thiamin was determined on the air-dried, ground biscuits by the thiochrome method (Cereal Laboratory Methods, 1941) with modifications as suggested by the Food and Nutrition Committee of the National Research Council (unpublished).

It was found early in this work that the same recovery values were obtained when the synthetic vitamin was blended with the flour as when it was dissolved in a portion of the liquid of the dough. As error might occur due to dusting if thiamin were blended into the flour, it was added as a solution. In all tests reported here 2.16 mg. of thiamin per pound of flour was added. In each group of bakings, biscuits receiving no thiamin were included and they were assayed for native thiamin, this value being subtracted from that of biscuits receiving thiamin. The percentage recovery of the added thiamin was then calculated by use of records on the weight of ingredients, the weight of cut dough pieces before baking, and the weight of the baked and air-dried biscuits.

In preliminary tests the following variations in baking procedure were found not to affect the recovery of thiamin:

Machine vs. hand mixing of doughs.

Single rolling vs. one or two foldings with subsequent rollings.

Immediate baking vs. benching of doughs for one half hour before preparing for the oven.

A round pan with doughs touching vs. an aluminum sheet with doughs spaced.

Rotary shelf vs. a wire rack for support of pans in oven.

Electric oven vs. gas oven at equivalent temperatures and times of baking.

Baking time varying from 9 minutes to 17 minutes, water doughs.

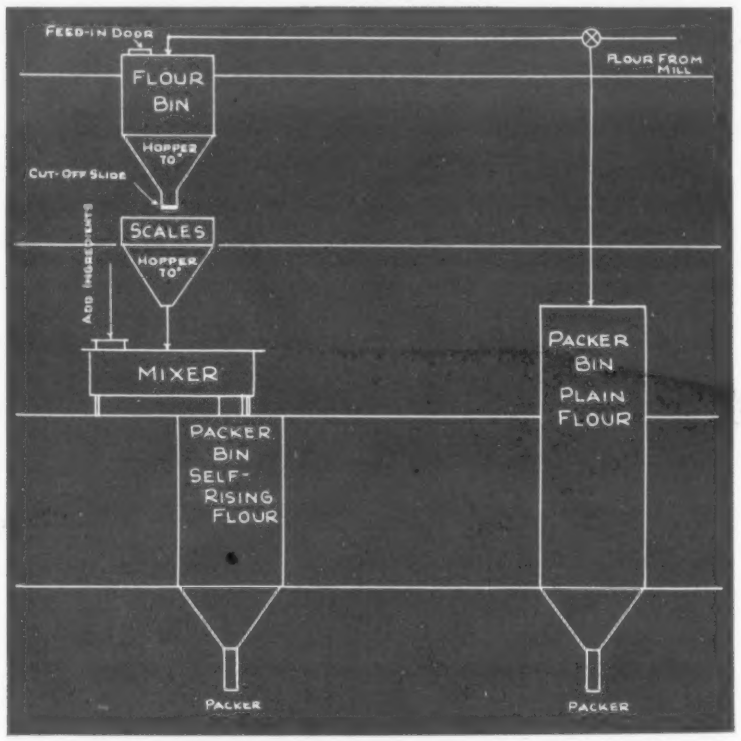
The size of the biscuit had some effect on thiamin recovery. Biscuits of normal size made by rolling a dough out between supporting strips 3/8" high resulted in 88% recovery, whereas only 79% thiamin was recovered when 1/4" strips were used to obtain thin, crusty biscuits. The 3/8" strips were used in all tests herein reported.

Assay for thiamin was made with a representative sample of the ground, air-dried biscuit in all cases. However, in one test the crust assayed 2.46, whereas the crumb when plucked out assayed 3.10 microgram of thiamin per gram of air-dried product. In another case biscuits baked so as to have deeply browned, partially burned crusts showed decreased thiamin recovery. Overbaking was avoided in the reported tests.

The recovery of thiamin in biscuits made from self-rising flours containing varying ratios of soda to phosphate was studied. Table I presents replicate assays on self-rising flour biscuits in which the ratio of soda to anhydrous calcium acid phosphate was the variable. Each assay value represents triplicate determinations. The average of the standard deviations of replicated determinations was 3(%), which indicates average recoveries to be true values. The amount of thiamin recovered was found to be in proportion to the acidity of the biscuits within the range of pH studied. Table II gives additional evidence that the amount of thiamin surviving the baking process is dependent on the pH. In this table, however, the biscuits were made with water as the liquid, so that pH values and thiamin retention in the biscuits made with anhydrous phosphate are slightly lower than those shown in Table I, where milk was the liquid. The two phosphates were commercial products, the anhydrous calcium acid phosphate having a titration of 86.0 and the calcium acid phosphate monohydrate, 83.6. The ratio of soda to phosphate was varied as before, but the total of soda plus phosphate was held constant in order to prevent any appreciable variation in the amounts of total residual salts.

Table II indicates that optimum thiamin recovery is attained in biscuits that are neutral or slightly acid. The data also show greater thiamin retention at the same pH level in the anhydrous phosphate series. It was thought that greater destruction may have occurred in the monohydrate series during the baking of the biscuits. A test was made wherein biscuits were removed from the oven at consecutive time intervals and the pH of the crumb was obtained after cooling. It was found that a maximum in pH values occurring after 4 to 5 minutes of

(Continued on page 20a.)



This simple self-rising flour flow sheet was drawn and published long before the term "enriched" was used in connection with wheat flours. It is shown here to emphasize that the production of self-rising products from enriched flour entails no more work than does the blending of plain pre-leavened flour.

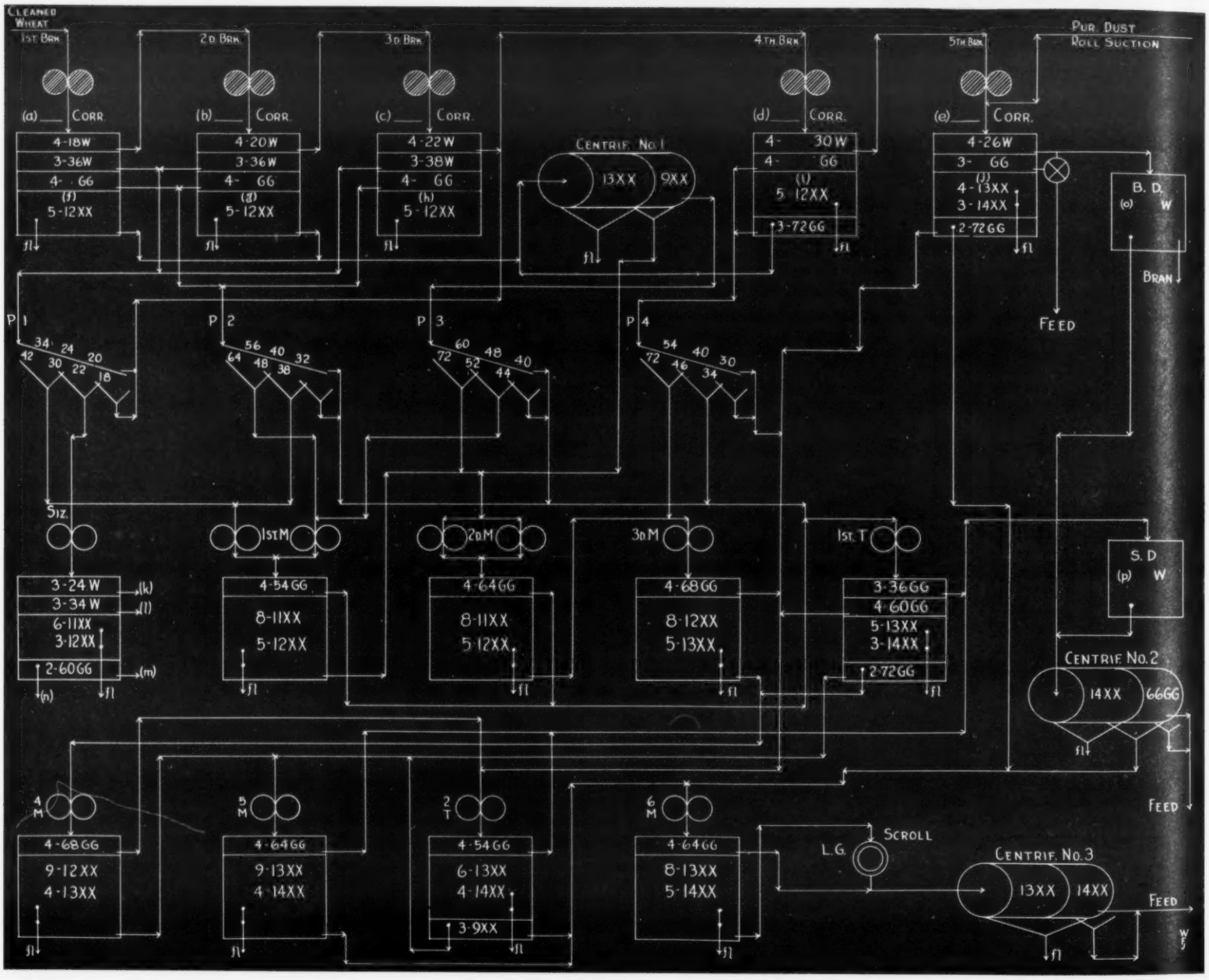
TABLE I

Replicate Assay on Self-Rising Flour Biscuits in the pH Range Found in Commercial Samples

(Milk used as the liquid; each gram of crumb except the blank received 3.9 micrograms of added thiamin.)

Self-rising flour composition				Total B_1 by assay			Total B_1 less B_1 of control bake			Recovery of added thiamin				
Neutralizing value	Soda, %	Anhyd. phos., %	Salt, %	Test 1, micrograms/g	Test 2, micrograms/g	Test 3, micrograms/g	Test 1, micrograms/g	Test 2, micrograms/g	Test 3, micrograms/g	Test 1, %	Test 2, %	Test 3, %	Ave. recovery of thiamin, %	pH of crumb
90 ...	1.545	1.705	2.0	3.46	3.48	3.35	2.99	2.76	2.84	77	71	73	74	7.4
85 ...	1.495	1.755	2.0	3.59	3.75	3.66	3.12	3.13	3.15	80	79	80	80	7.2
80 ...	1.445	1.805	2.0	3.66	4.02	4.11	3.19	3.40	3.60	82	87	92.5	87	7.0
71.5...	1.355	1.895	2.0	3.90	4.34	4.09	3.43	3.72	3.58	88	95	92	92	6.8
80 ...	1.445	1.805	2.0	0.47	0.62	0.51	...	...	...	..	..	..	..	7.0

AN INCOMPLETE FLOW SHEET . . . WHAT GOES WHERE?



IN the accompanying illustration an *incomplete* flow sheet for a more-or-less "standard" 300-bbl flour mill is offered for comment. It is not intended to be primarily "instructive" or "informative," although the young man who "thought it up" believes that it might be both, in some degree. Chiefly, however, he felt that a good many millers, both young ones and others not so young, would be interested in the presentation because they like to study flow sheets—and discuss them.

The thing isn't a contest, but millers everywhere are invited to make the program complete by supplying the missing figures and facts, without identification, if so desired. From the replies received perhaps we can all get some idea of how near to (or far from) "standardization" are the minds of millers generally. *Possibly,* a little later on a small group of successful operative millers may be induced to get together and argue the thing out, in which case the flow sheet, with the blanks all filled in, will be republished.

For the convenience of those who are interested, here is a list of the particulars left blank and designated by letters of the alphabet:

(a) 1st brk corrugations .....
(b) 2nd brk corrugations .....
(c) 3rd brk corrugations .....
(d) 4th brk corrugations .....
(e) 5th brk corrugations .....
(f) Grading sieve, 1st brk section .....
(g) Grading sieve, 2nd brk section .....
(h) Grading sieve, 3rd brk section .....
(i) Grading sieve, 4th brk section .....
(j) Grading sieve, 5th brk section .....
(k) Destination of top scalp, sizing section .....
(l) Destination of 2nd scalp, sizing section .....
(m) Destination of overs 60GG, sizing section .....
(n) Destination of throughs of 60GG sizing section .....
(o) Number of bran duster wire .....
(p) Number of shorts duster wire .....

Considering this flow as that of a mill with a nominal capacity of 300 bbls per day, it would be in order to suggest the most suitable type of corrugations for soft wheat, hard wheat, or for both, giving also the spirality and differential preferred. If there should be any who wish to go still further, the number of square feet of cloth needed for each operation would be of interest, including purifier cloth. To this might be added the sizes of the rolls used, with the linear inches represented, it being understood that it is seldom quite possible to make either bolting surface or roll inches completely consistent for mills of various capacities, due to the limitations of roll lengths and sectional divisions of available equipment.

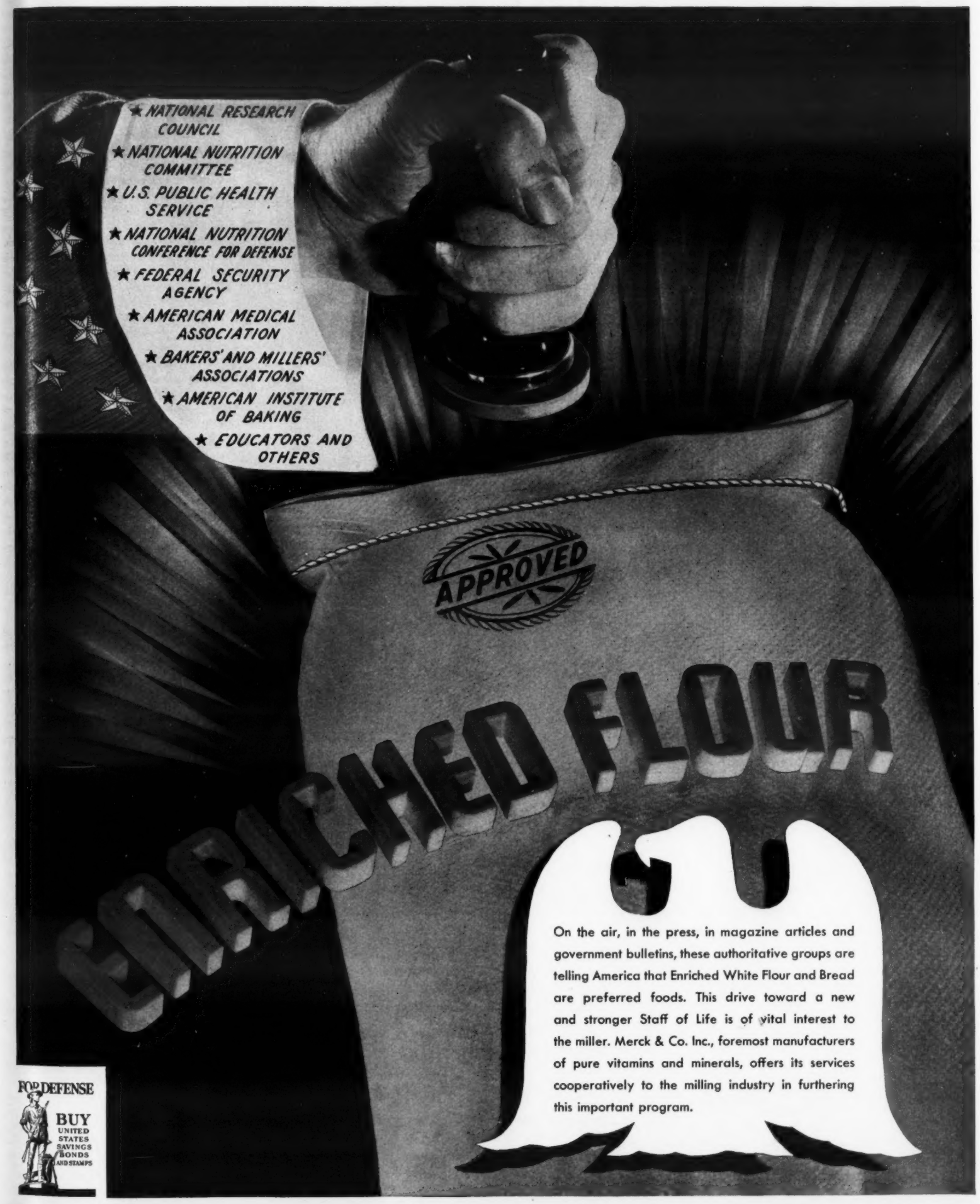
It Has Its Limitations

FACTS ABOUT CORN AS A FUEL

BECAUSE of a shortage of coal and a surplus of grain, a South American country recently decreed that for every ton of coal used a certain amount of corn must also be utilized as fuel. Since large power producers burn powdered coal extensively, it was suggested that the grain might be profitably carbonized and then reduced to powder form, to facilitate its use. Investigation proved the proposal infeasible, however. Analysis made of the problem is of considerable interest, inasmuch as the behavior of the carbohydrate constituents of grain is identical, except in the matter of time, in the retort, in storage, or in the digestive tract.

All coal contains hydrocarbons as well as "fixed carbon," the percentage of the latter being high in bituminous coals. In coking, the hydrocarbons are

(Continued on page 21a.)


★ NATIONAL RESEARCH COUNCIL
★ NATIONAL NUTRITION COMMITTEE
★ U.S. PUBLIC HEALTH SERVICE
★ NATIONAL NUTRITION CONFERENCE FOR DEFENSE
★ FEDERAL SECURITY AGENCY
★ AMERICAN MEDICAL ASSOCIATION
★ BAKERS' AND MILLERS' ASSOCIATIONS
★ AMERICAN INSTITUTE OF BAKING
★ EDUCATORS AND OTHERS
APPROVED
ENRICHED FLOUR
On the air, in the press, in magazine articles and government bulletins, these authoritative groups are telling America that Enriched White Flour and Bread are preferred foods. This drive toward a new and stronger Staff of Life is of vital interest to the miller. Merck & Co. Inc., foremost manufacturers of pure vitamins and minerals, offers its services cooperatively to the milling industry in furthering this important program.
FOR DEFENSE
BUY UNITED STATES SAVINGS BONDS AND STAMPS

MERCK & CO. Inc. *Manufacturing Chemists* RAHWAY, N. J.

NEW YORK • PHILADELPHIA • ST. LOUIS • *In Canada:* MERCK & CO. Ltd., Montreal and Toronto

A Miller Looks Back

★

The First World War Brought Operating Problems That May Be Duplicated Today. . . . Here Is the Beginning of a Series of Reminiscences About Old Times Once Again Timely

A CALENDAR is supposed to be an orderly system of dividing time into definite periods—days, weeks, months, years, et cetera—for the purpose of adjusting the affairs of life to the turning of the earth upon its axis and to its periodic circling of the sun. To be worth anything much the system has to be exact, or very nearly so, and such small discrepancies as appear in one place must be compensated for in another. It is recorded that Julius Cæsar made a notable adjustment of the system existing and in general use prior to the year 46 B. C., dividing the year into 365 days with an additional day allotted to every fourth year. This arrangement was so nearly exact that nobody paid any attention to the slight error for some 1,600 years, when a Roman Pope by the name of Gregory found that the world was actually getting a little ahead of itself. He then devised the "Gregorian calendar," in which we are deprived of our extra "leap-year" day upon rare occasions, and it may be supposed that the present method of calculating time is close enough for all practical purposes.

Of course there was never a discrepancy amounting to more than a few minutes in any one year. The period between the coming of the shortest daylight day from one year to another has been approximately the same for a long, long time. Which argues that the years of boyhood are not really longer than the years of manhood. They just seem longer. When a man is in his thirties, "thirty years ago" naturally seems a very long time ago, but it is altogether probable that, at least until senility overtakes a fellow, decades, like lenses, add clearness to vision.

I had a vague conception of all this before I started out to interview Peter Garrulity about the changes that had taken place in milling during the last thirty years, and before I had talked with him for fifteen minutes I had come to the conclusion that suppositions concerning the status of production in 1911 are founded upon facts only in rare instances. To me, Mr. Garrulity is an unusual individual. However, since the purpose of this article is to present the veteran miller to the readers of this journal through his reminiscences, they will judge whether this is true or not, and, if so, why.

v v

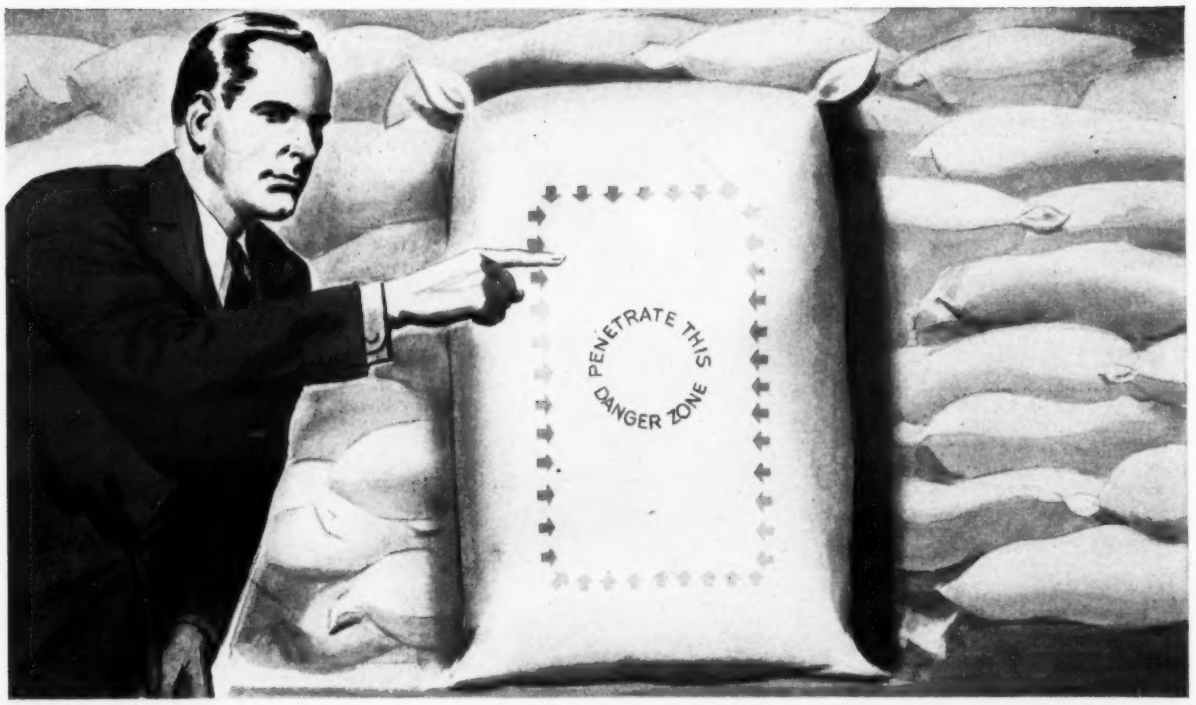
I found Mr. Garrulity sitting in what appeared to be a very comfortable chair at a big, old-fashioned roll-top desk. His office was detached from the mill, in the corner of a building which appeared to be a sort of warehouse in which were stored some conveyors, shafting, pulleys, and other supplies of a like nature. As I stood beside his desk, when I first entered, I could see through an open doorway a long table which seemed to be used for examining samples of wheat and flour, and in the office, under a broad window, was a drafting table. Beside it was another table holding some books, and above it, in the wall, were several instruments which I later learned were a barometer, a psychrometer, an ordinary thermometer and three or four special thermometers, unmounted. He shook hands with me cordially and invited me to sit down in a big chair facing him.

"I understand that you want to interview me," he said, setting an ash tray where I could reach it and offering me a cigarette from a pack lying open on the desk, "but I haven't been able yet to figure out why."

"Well," I replied, "I'm supposed to be a journalist, sir, and my boss thinks that if you will be good enough to talk to me about how flour is made today and how it was made at the beginning of World War No. One I may be able to write something that will be both interesting and valuable to our readers."

"H'm'm," he said. "I'm 'fraid you're going to be disappointed in me. Nobody ever 'interviewed' me before, and I hope you're not figuring on going through the sort of rigmarole some of those birds that interview people on the radio do. Like, for instance, 'How does it feel to be sixty years old; to have a bunch of

"IF YOU DON'T
GET 'EM HERE
YOU DON'T GET 'EM AT ALL!"



PENETRATION is a point of primary importance in most fumigations. To reach only those insects and pests nearest the surface is not enough. For these invaders of precious food supplies multiply rapidly—and a few live pests lurking deep within bags and containers will soon re-infest the entire stock.

Dow METHYL BROMIDE is the perfect answer to the penetration problem. Its high rate of diffusion gives it *extra* penetrating power—*added* force to reach into the very center of the "danger zone" where ordinary fumigants fail to go. Therefore, with METHYL BROMIDE, the kill is quick and complete—in *every* stage of insect development.

Dow METHYL BROMIDE has proven itself time and again in many types of difficult fumigations. It is easily applied, thoroughly effective and exceptionally inexpensive to use.

If you want to be sure you're getting a *complete* fumigation, use Dow METHYL BROMIDE. Write for full information today.

THE DOW CHEMICAL COMPANY
MIDLAND MICHIGAN
New York City · St. Louis · Chicago · San Francisco
Los Angeles · Seattle · Houston

Dow
METHYL BROMIDE
THE PENETRATING FUMIGANT

grandchildren; to have worked in a flour mill for close to 45 years; and to have managed to get along with one woman for two thirds of a century?' That kind of stuff—"

He paused, and I hastened to assure him that I certainly would try not to ask anything that was either silly or impertinent.

"I didn't think you would," he told me. "I was just trying you out a little. If there is actually anything I can tell you about milling, that everybody who works around mills doesn't already know, I'll be glad to do it. But there's just one thing: you'd better be careful *not* to make me say on paper what I didn't actually say to you. Down in the bottom drawer of this desk"—and he cast a glance in that direction—"I've got me an old broadax with a mighty sharp edge, which my grandad used to hew square timbers out of logs before sawmills came in, and if I'd ever take a notion to use it on anybody—"

He grinned, and I didn't feel at all uneasy. I assured him again, however, that I'd be extremely circumspect about both what I asked and what I wrote.

"All right, then," he said; "go ahead and ask your questions."

"Well," I began, "you certainly have heard a good many times, Mr. Garrulity, that there actually hasn't been any real improvement in milling 'in thirty years.' What I'd like would be for you to tell me, in your own words, how *you* were milling thirty years ago—and twenty-five, and twenty, and fifteen, and ten, and five years ago. And how you're milling now. Would it be too much to ask you to tell me about the mills you have operated during the last thirty years, describing the machinery used and the way it was used? How did the wheat you ground then compare with the wheat grind today, and the flour made then with the flour you are now making? What about the tempering, or conditioning, of the wheat, and the testing of the flour? If you would just start in and tell me all this, perhaps in the form of a story such as you've probably told your children a good many times when you had to entertain them, that would be fine. Then I wouldn't have to ask you a lot of questions that'd probably be terribly foolish because I know so little about the subject."

There were many tiny crinkles around his eyes as he looked at me and asked: "How long do you expect to stay? Six months? A year, maybe?"

"I probably will stay till you get your broadax out," I told him. "And however long the story is, it won't be too long. You see, there's nothing to keep me from coming back again and again—unless it is that broadax."

"Well," he said, after a minute or two, "maybe you've got the right idea. Anyway, we can try it. I could start in a long time before 1911, and tell you about the first couple of mills I worked in, back in the days when practically all scalping, bolting and dressing was done on reels—long reels, and a lot of them. Pretty near a mill full of reels. But that would certainly take in too much territory."

"It would certainly be interesting."

"Maybe so; maybe so. I gathered, though, that the thing you really wanted to get at was a comparison of the situation at the beginning of the other war and now."

"Well, on the whole, that is true. But—"

"I think the best I can do is to hop back to about 1914— or maybe a little earlier, so as to get a sort of background —and then go on from there. But you'll probably have to watch out for me, and catch me up now and again by asking certain questions, or else I'll be wasting a lot of time on little anecdotes that don't have any great significance. Will you do that?"

"Yes, if you wish it. But—"

"All right, then," he interrupted. "We'll jump back 30 years, just to let me get my bearings, and start from there.

"I wasn't in charge of a mill 30 years ago, but was running second in a 600-bbl plant in the Southwest wheat belt. Before that I'd been general superintendent—and head miller and oiler and sweeper and flour packer—of maybe three different mills, the biggest capable of making maybe 100 bbls in a 24-hour day. Each time I was pretty glad to get a job as second miller again, and get a pay envelope every week.

"I recall one job I got in a mill that was just throwing out reels and installing sifters, in 1898, I think it was, and I remember about the head miller's 'discovery' that wheat ought to be tempered with a right considerable amount of water. Just how much, there wasn't any way of telling, but it was my job, on the night trick, to keep a good-sized stream of water running and switch the wheat stream from one wooden bin to another, when the first one got full. You can take it from me that we used to have some fun around that place when—

"You see, there I've run off the track already. We'll never get anyplace that

(Continued on page 21a.)

★ ★ THE PARADE OF THE PIONEERS ★ ★

HERNANDO DE SOTO—1541

In May, 1541, Hernando De Soto arrived on the east bank of the Mississippi at Chicsaw Bluffs. He had failed to find another "Peru" with its fabulous riches, and shortly gave up his quest to die on the great river's muddy banks.

Those following the paths of his journeys discovered great wealth, vegetable and mineral, for today the Mississippi River drains one of the richest basins in the world.

Milling has played a leading role in the development of this vast area, and Swiss Silk Bolting Cloth is proud of its part in the great milling industry which has contributed so much to the growth of America.

BODMER • DUFOUR • EXCELSIOR • SCHINDLER • WYDLER

★ Specify "SWISS SILK" ★

PRODUCTS OF MILLING OPERATIONS

Part Three

THE human imagination (or at least *our* imagination) has a difficult time attempting to visualize sizes. Here is an example: the photographs published in this series are exact six-time enlargements of the original material. While it is no trick at all to see, in the mind's eye, that an object 1" square enlarged six times would be as big in all of its perimetric dimensions as half the length of an ordinary foot rule, no such homespun comparison is possible when the original subject is approximately the size of a self-respecting pin head. Of course, we may just be unimaginative. But let's see how good you are at this game.

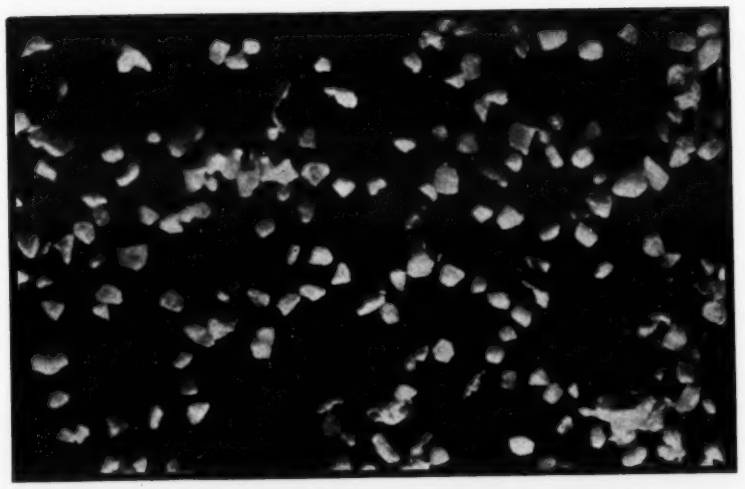
After the large engravings which accompany this article were made, some one suggested that it would be interesting to publish also a contact (direct size) print of one of the stocks. Fine, we thought. So we tossed one of the original "contacts" to the engraver. Back he came with the small cut reproduced here. There was only one difficulty: we'd selected the small print at random, and couldn't remember just which stock it represented. A casual inspection didn't tell us, either. All right—you try it: which of the enlargements shows particles six times the size of those in the small picture?

It doesn't take very long—but it is rather surprising—to find that the print represents the original dimensions of the second break sizings (the heavy middlings shown in No. 11). We say "dimensions" because that's about all a 1:1 print *can* show. In the enlargement, the large strips of bran loose among, or attached to, the middlings of this stock are readily discernible.

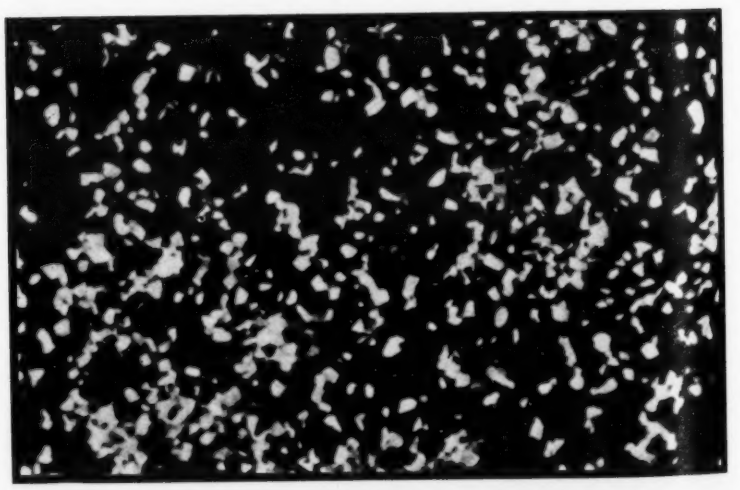
When the first break stocks were pictured, ash, protein and figures for the parts of offal per 100 units of pure endosperm were given. Since several of the second break stocks have the same destination as comparable ones from the first sifter, it is interesting to review the analyses to see just what has been done by the operations. The scalp of the first break obviously contained much more endosperm than did the stock scalped over the 20W (No. 10) of the second break sifter. First break scalp had an ash of 1.8: there were 26.27 parts of offal. The comparable stock from second break shows an ash of 2.424, with a protein of 14.35. It has 36.116 parts

No. 9. Second Break Chop

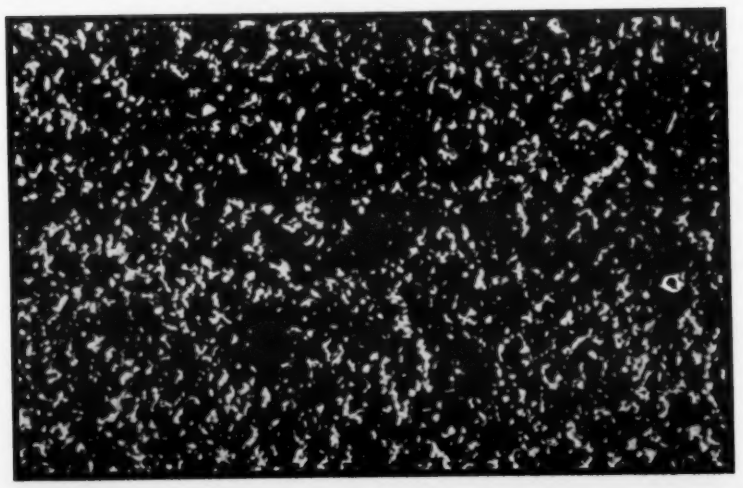
No. 10. Scalp of Second Break to Third Break Rolls



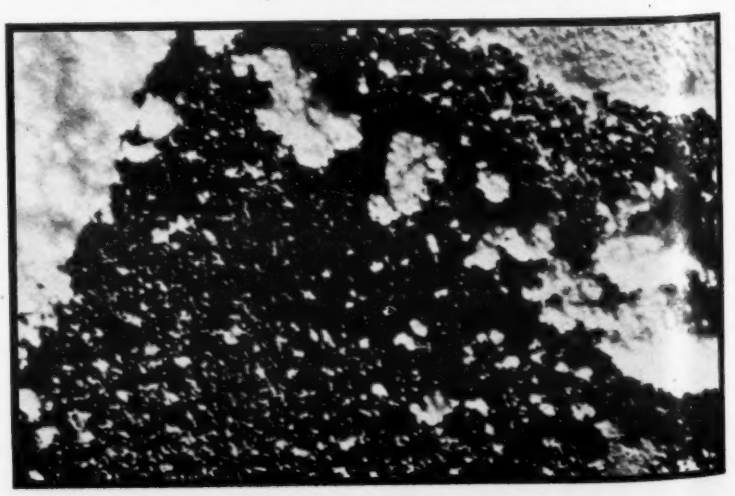
No. 11. Second Break Sizings (Heavy Middlings) to Purifier One



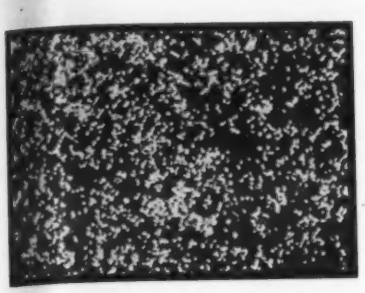
No. 12. Second Break Coarse Middlings to Purifier 2



No. 13. Second Break Medium and Fine Middlings to Dusting Section



No. 14. Second Break Flour



One to One Reproduction of Stock

of offal to 100 parts of pure endosperm.

The sizings (No. 11) are scalped over 34W in both the break sifters. Those from first break had .854 ash and 12.74 parts of offal. Ash in the sizings from second break is down to .734—and offal content is lowered to 10.96. Protein is 11.60. Both stocks go to purifier 1.

The coarse middlings over the 60W (No. 12) go, with the similarly-treated stock from first break, to purifier 2. Ash is down from .580 to .406. Parts of offal are correspondingly lower, being 6.056 as compared with 8.65. Protein of the second break coarse middlings is 11.45.

The fine middlings, Fig. 13, go to the dusting section, joining the "dunst" through 9XX on first break. This stock had .520 ash and 7.75 parts of offal. From the second break the fine middlings have .396 ash and 5.97 parts of offal. Protein is 11.50.

First break flour had .560 ash and 8.35 parts of offal. Ash in the second break flour is less—.480. There are 7.16 parts of offal. Protein content of the stock is 12.45.

It is easy to anticipate a certain number of shortcomings in such a photographic survey as it progresses toward the tail of the mill, for stocks will be finer and their differences less visible to the camera lens. But that is getting ahead of the story. At the present, a comparison of these pictures with those taken of first break stocks brings very plain visual evidence of what the gradual reduction process is. The second break chop has few, if any, middlings as large as some of those shown in the chop of the first break. In the scalp stock of the second break sifter, several pieces of bran almost cleaned of endosperm chunks may be seen: in the first break scalp there were many berries barely broken. There is little difference in the dimensions of the sizings from both breaks, but the stock pictured as first break sizings has a noticeably greater number of bran strips. This difference seems even more pronounced between the coarse middlings from each reduction.

In the first break program, the medium middlings were sent to purifier 5. They were taken over 9XX, while the particles fine enough to go through the 9 were sent to the dusting section. In the second break the 9XX is not used. Instead, the medium and fine midds. over the 12XX are sent together to the dusting section. Combined, they are lower in ash than the stock pictured as No. 8.

As far as the flour is concerned, it is going to be difficult to show much difference between the best and the worst. Perhaps a much greater enlargement would do the trick, but there are limits to what film can do. However, we're going to try a 12-time blow-up one of these days just to see how it will look.—Richard E. Miller.

How to Handle Belts

By J. G. West

In the paragraphs to follow are a number of belt maintenance pointers gathered not only from actual mill practice but also approved by belt manufacturers. The correct maintenance of leather belt requires that tensions be held within their predetermined limits, and that they be cleaned and "greased" at regular intervals. Regular inspection of belts and pulleys will indicate when belts should be shortened, and also reveal conditions that tend to destroy or damage belts.

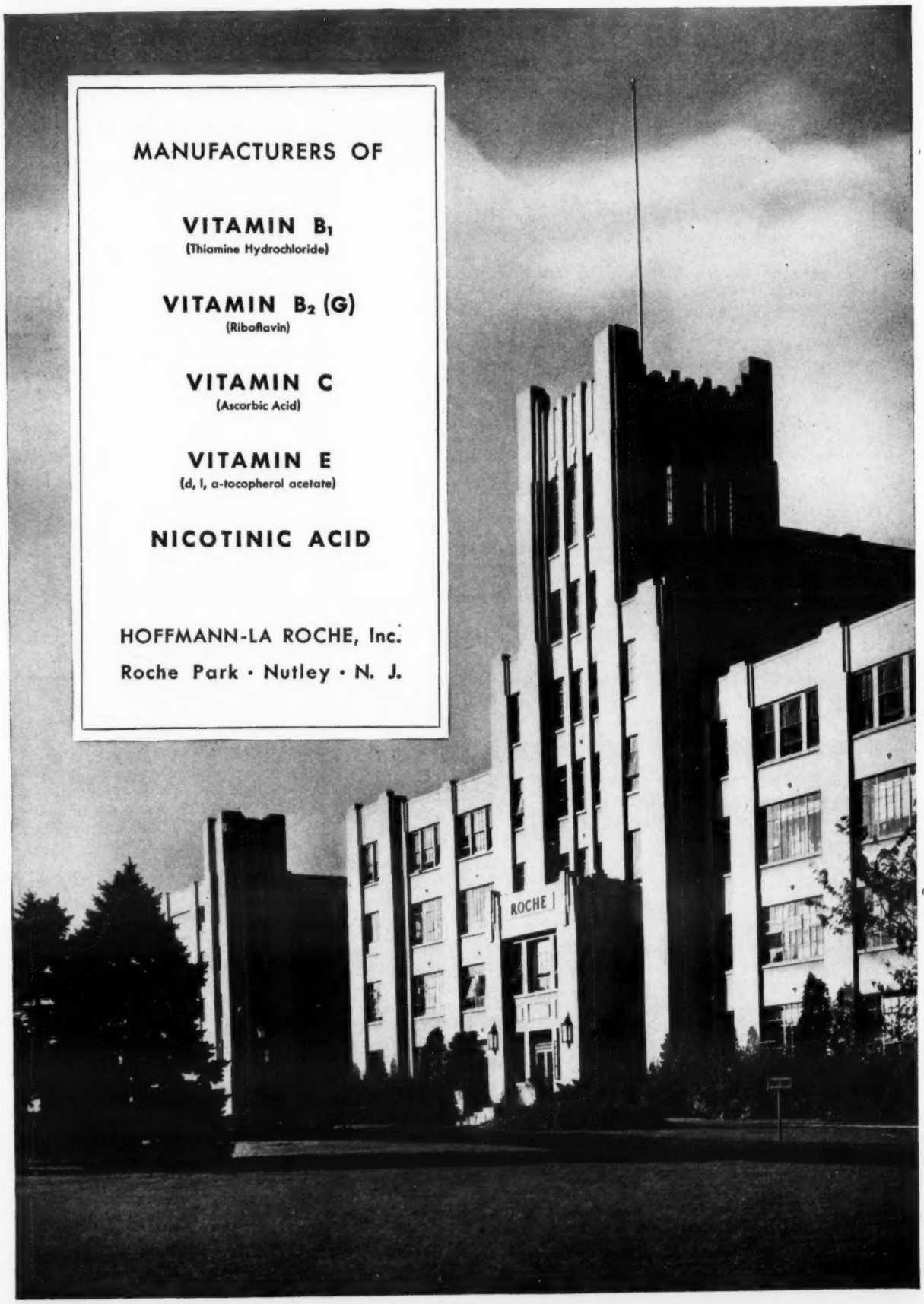
Every precaution should be taken to prevent belts from becoming saturated with lubricating oil or from coming in contact with oil at any time. When the belt does become so saturated it may be cleaned by first scraping it and then packing it in sawdust or other absorbent for several days.

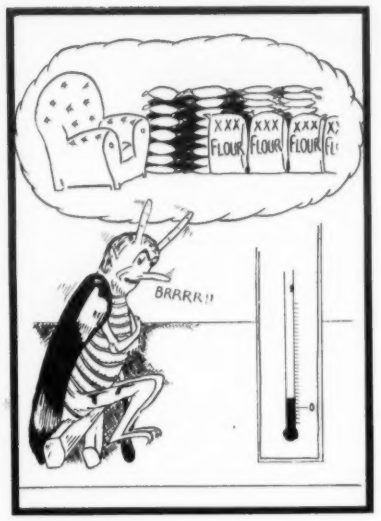
A quicker method is to pass it between rolls, under pressure, thereby squeezing out the oil which then may be absorbed by powdered chalk.

Surface dirt may be removed from belts by wiping them with a cloth moistened with kerosene. This should be done in every case before applying belt "grease."

Belt dressings are used to increase the co-efficient of friction of a belt and thus enable them to pull heavier loads with a given tension. They should be applied *only* when the belt slips during operation. The dressing should be applied sparingly to enable the drive to continue to pull its load until the machine can be shut down and the belt tightened.

(Continued on page 14a.)





The Adventures of C. G. Beetlebug

As Told to Rad Nelson

HOME to me has always meant a nice comfortable lounge in a cozy corner, an abundant supply of food, preferably several varieties, and a loving little wife. So these past few months in the cramped quarters of a trailer have disturbed my tranquillity no end. I remarked as much to the spouse.

"As a permanent home, the crack in this trailer kitchen wall isn't what it's cracked up to be," I muttered one early spring morning.

"No, Connie, it isn't," she squeaked, "and it's about time you did something about it. There's no rest for the weevil, you know."

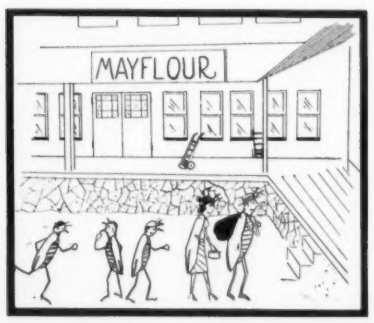
She turned her head saucily to one side, preened her wings with a graceful leg, and buzzed meaningfully. I became aware of her timeless beauty and was induced to improve our domicile.

Of course it was any old port in a storm when we moved in. A disastrous fire drove us from luxurious surroundings at the mill. Now I resolved to find a better location for my growing family, remindful of the increasing persistence of the little woman.

Besides they didn't even have space here where I could display my shingle reading:

CONFUCIUS G. BEETLEBUG
Blitzkrieg Infestation
24 Hr. Service
Satisfaction Guaranteed

My membership in the National Itinerant Insect Association came in mighty handy. I dropped them a line and within a few days some marvelous travel folders arrived, each singing the praises



This is NOT the way in which the Beetlebug family entered the mill. That is a rigidly guarded trade secret.

of flour mills and their products in many parts of the country.

It was one of those chilly spring days, late in March. We were indoors, the children nestled around their mother on the pantry shelf, and I huddled on my makeshift stoop of burnt matches. Together we looked through the pictures and read the alluring captions of various flours.

"Beautybox" and "Snowhyte," "May flour" and "Alabaster" were enchanting prepared mixture flour names intermingled with such substantial bakery brands as "Litekake," "Bestbet," "Snowkap" and "Baker's Belle." From far and wide came more circulars, each adding new possible destinations for us once we hit the highway to a permanent residence.

Now the Mrs. has always been high class. She took a liking to "Mayflour" which had just been introduced to the trade.

"But it's such a nice conservative name!" she protested, when I suggested "Cloudykap" as a flour with which we had satisfactory experiences on previous occasions.

"'Mayflour' reminds me of Plymouth Rock," she asserted. "The Pilgrims were such fine people. I'm sure we'd find

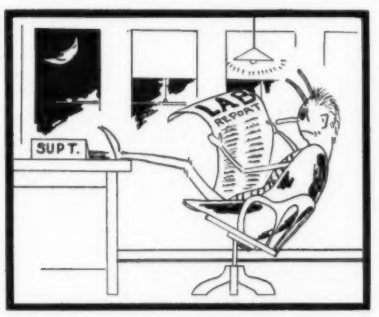
From the elevator boots the family had no difficulty in reaching the rest of the mill.

flour with a name like 'Mayflour' to be full of enriching vitamins, and generally nutritious for the children. We've got to think of the kiddies, Connie. They've spent the winter on half rations in a drafty trailer."

I remarked we did have to consider the multitudinous offspring in determining where we should go. Besides, I hadn't been feeling so well myself. The starvation diet had taken its toll in several micrograms off my waistline and the wife was certainly not the robust woman she was last summer.

Juvenile selections were studied in our several discussions. The youngsters always chose a remote location as the most desirable. Inherited a bit of wanderlust from their old man, I guess. At any rate, they insisted "Rocky Mountain Rose" or "Kentucky Carnation," "Texas Queen or "Dakota's Best" would offer the best prospects for a suitable home.

We considered more than flour names in selecting a home, however. Mills that advertise flour made on new equipment recently developed by manufacturers are not exactly the best, from our viewpoint Some mill machinery can be as formid-



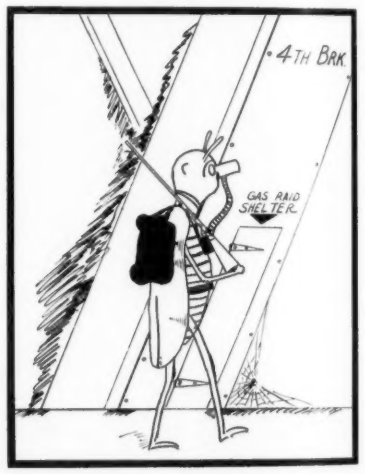
Mr. Beetlebug tries espionage.

able as an armored tank. Mills manufacturing flour year after year on the same outmoded equipment which should be discarded offer the most desirable locations for our ilk. These sites are often over-populated, but the more the merrier, I always say. In union there is strength —against insecticides.

Mills with water and rail facilities sometimes afford unusual opportunities for our breed. I'll never forget the heavenly summer we spent in the warehouse of "Bargain-by-the-Sea," where particularly negligent workers assisted our day and night labors by storing the best pastry and cake flours in unfumigated places. There was never a sign of pest molestation in that mill. We sent emissaries to all parts of the country, by barge and boxcar. I never could understand why some official looking individuals came by one day, closed the mill down and destroyed our source of supply. Our larvæ and pupæ suffered severe losses by this "invasion" although I managed to escape.

The mountain air is invigorating, as I recall, and mills at high altitudes and in the north have wonderful heating systems for personnel and pests. Visions of the comfy easy chair, slippers, and a bag of plump grain danced before my optics as I sat in the unventilated trailer that evening.

Our domestic debate finally resolved itself into a seashore-mountain choice. "Minnesota Minerva" was a tempting



They took every precaution it is possible for the insect mind to contrive.

flour with a lilting title which held my vote for awhile. I'm a pushover for a rhyme any time. A belated folder describing the all-purpose characteristics of a certain kitchen flour called "Bride's Best" was considered by my wife for a few days. Names notwithstanding, we knew we would require an insect-safe home with ample accommodations for an amazing increase in our population which could be expected.

"Mayflour" and the mill in which it is made was the final family choice as our destination for the coming summer months. Departure preparations were started and in a few days we were ready to go.

Instead of forsaking our little flour package home in the trailer when it became empty, we stayed in the bag when it was discarded in a camp adjoining a highway service station. With emergency rations for each member of our family we prepared for the perils of transition. We descended upon the filling station food stores and awaited transportation.

Everyone knows a mill delivery truck has a sweet clean smell which clings to it wherever it goes. One of these trucks came sailing down the highway one afternoon. My middle name isn't Grain for nothing! Catching the scent with my acute antennæ I knew I was not mistaken. Giving the family the signal to follow

me, I climbed aboard unnoticed by the driver, who was tending his truck.

"This is luck!" I cried to the others who were coming in the open rear door in droves. "Look at this bale of used flour sacks. The very thing for automatic passage into the mill." My discovery was enthusiastically approved by one and all.

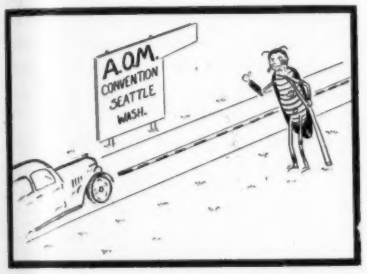
"The only thing we must avoid now is a fumigation vault," cautioned the Mrs. in a soft voice, so as not to frighten the children, atwitter with excitement.

They were exploring our new surroundings.

At that moment the bale of sacks lurched vigorously. We held on tight because our moorings were insecure as yet. The truck began to move, and the bags swayed gently in rhythm with the movement. We burrowed deep into the center of the bale, safe from dislodgement, and awaited arrival at the mill.

"Oh, look! How fortunate! Mayflour!"

My wife had discovered that the flour bags were properly covered with advertising—on both sides and the ends, in fact. And the name was "Mayflour."



Editor's Note.—When Mr. Beetlebug made his convention plans he didn't consult Mr. Henderson. But he'll find some way to make the trip.

This certainly was good fortune. If we stayed with this bale of used "Mayflour" bags we'd soon be in the very mill we'd selected as our future home.

The better half was right. "Mayflour" seemed to be a very high quality product, especially suited to insects suffering from a long winter's malnutrition. The flour dust I tasted in my bag was flavorful. It had the "flour scent that satisfies" all beetles.

Our unannounced entrance into the mill was an easy matter. It was executed in a manner known and practiced by all honorable beetles in good standing, but which, incidentally, is a rigidly guarded trade secret.

In the basement of the mill we discovered a handsome row of wooden elevator legs, nicely encased in flour dust and sweepings. This, we immediately decided, would be the base of our operations. From here we could navigate to all points in the mill. By climbing aboard an ascending bucket we could ride to the top of the mill, and then through convenient spouts, descend to sifters and purifiers. The Mrs., always thinking ahead, soon discovered the wetting conveyor and the adjacent elevator bins. This was just in case the mill should be closed down for any length of time because of a strike, for instance. Strikes never prevent us from working.

We made ourselves at home, multiplying without molestation. Our infestation was as thorough and as smooth as a flour slick slipping into a sample of short patent.

One night I was roaming around and happened to run across the superintendent's desk. His operating schedule was open to view. I noticed data concerning the new crop. The first truckloads had arrived in the elevator and they would soon mix it in and run a batch to get some samples of the new flour to test for protein and ash.

This was news. We are always anxious to know whether the new crop is going to be digestible.

In the days which followed I kept track of the new crop data. Its baking characteristics were excellent. Gluten tested perfectly. It was easy to mill. All this was evident in the exchange of memoranda between laboratory and office, and which I went over when the manager was out to lunch.

But a sinister note crept into these reports one day. At the bottom of a particularly dry bit of information concerning crumb structure and crust color (what difference does that make to our kind?) I noticed the chemist had written, 'The high quality of this new flour will make it a product sought after by certain indigenous grain pests.'

"Thanks, pal," I murmured under my breath.

"Another bouquet for you, my dear," I said to the wife when I descended the elevator to our bivouac in the boot. "How did you know this 'Mayflour' was going to be so tasty, made from the new crop?"

(Continued on page 19a.)

IS YOUR MILLING HOUSE IN ORDER

Have you the shortest perpetual inventory method ever devised for use in a mill? Are your cost records, sales data and recoveries so kept as to aid sound management? Increased taxes and governmental controls have multiplied the need for close supervision over your business—essential to earning a profit. Probably we can help you.

ARTHUR L. CHANDLER
504 Merchants Exchange, St. Louis, Mo.

LABORATORY SERVICE
Exclusively a Cereal Consulting and Control Laboratory for the Flour, Feed and Grain Industries.
ST. JOSEPH TESTING LABORATORIES, Inc.
Corby Bldg. St. Joseph, Mo.

ROLL GRINDING
and CORRUGATING
Also NEW ROLLS for Sale
TWIN CITY MACHINE CO.
Minneapolis, Minn.

CHECKERBOARD ELEVATOR CO.
MILLING WHEAT • COARSE GRAINS • MILLFEED
Hard and Soft Winter Wheat
ST. LOUIS • KANSAS CITY • MINNEAPOLIS • DENVER • BUFFALO

FULL STRENGTH MALTED WHEAT FLOUR

THE STANDARD OF QUALITY FOR THE MILLING INDUSTRY

Seven years of experience operating the largest exclusive wheat malting plant in America enables us to furnish mills a malt flour of unvarying uniformity.

We are familiar with your requirements. Our laboratory service is available to you. Send samples of your flour for tests and recommendations. Write or wire us for quotations.

The Kansas Milling Company
WICHITA KANSAS

INSURE WITH
THE "MILL MUTUALS"
They Have Devoted Years of Study to Your Insurance Problems

Michigan Millers' Mutual Fire Insurance Co.	Lansing, Michigan
Millers' Mutual Fire Insurance Assn. of Illinois	Alton, Illinois
Mill Owners' Mutual Fire Insurance Company	Des Moines, Iowa
Grain Dealers' National Mutual Fire Insurance Co.	Indianapolis, Ind.
Millers' National Insurance Company	Chicago, Illinois
Pennsylvania Millers' Mutual Fire Insurance Co.	Wilkes-Barre, Pa.
Millers' Mutual Fire Insurance Company	Harrisburg, Pa.
Millers' Mutual Fire Insurance Company of Texas	Fort Worth, Texas
Western Millers' Mutual Fire Insurance Company	Kansas City, Mo.
National Retailers' Mutual Insurance Company	Chicago, Illinois

FOR FIRE PREVENTION ENGINEERING SERVICE ON MILLS AND ELEVATORS
Address the
MILL MUTUAL FIRE PREVENTION BUREAU
400 West Madison Street
Chicago, Illinois

Utility Linens

Towels, Pillow Cases, Luncheon Sets, Dresser Scarfs, Runners and Doilies, Napkins and Dish Cloths are

STANDARD EQUIPMENT
for
EVERY HOME

They Are Also, Every One, Possible By-Products of Flour

For the lure that really sways a woman's choice—
Consider . . . .

KENT *Needlecraft Bags*

★ ★

Factories Conveniently Located

OFFICES
New York Buffalo Kansas City Chicago Minneapolis
Wichita Oklahoma City Williamstown, Mass.

PK
PERCY KENT BAG COMPANY, INC.

KEEP 'EM TURNING!

Anyway you look at it "AKRON" is good belting.

"AKRON" LEATHER BELTS
Made in Grades Especially Adapted to Milling Machinery
ROLLS • BOLTERS
PURIFIERS • SCOURERS
DEGERMINATORS
(for Corn Mills)
FANS • ETC.

Used by Millers for Over a Half-Century
THE AKRON BELTING COMPANY
Leather Belting Makers Since 1885
AKRON, OHIO
Memphis, Tennessee, 406 S. Second St.
Greenville, S. C., 15 Augusta St.,
Chicago, Ill., GUY H. CASTLE, 619 W. 120th St.

Purchased Power . . .
is ECONOMICAL
DEPENDABLE
and SAFE!
◆
NORTHERN STATES POWER COMPANY

The Gelatinization of Starch

By C. O. Swanson
Kansas State College, Manhattan

THE swelling of starchy products when boiled in water is familiar in various food preparations. One purpose of cooking is to swell the starch granules so as to increase the surface area and decrease the density, and thus make them more easily attacked by the digestive enzymes. The swelling is caused by imbibition of water by the individual granules.

This imbibition does not ordinarily take place in cold water, because the less hydrated layer of amylopectin, or alpha-amylose, is not readily penetrated by cold water. The heat of boiling causes the necessary distention of the outer molecular layers of the granules, so that the water molecules can penetrate. The rupture, or breaking of the outer layer, also promotes the entry of water. Alsberg (1926) observed that injured granules swell in cold water to the same size as they would in boiling water. This injury may take place in the milling process. Alsberg and Griffin (1925) examined microscopically overground hard wheat flour. The starch granules could be seen free from the gluten matrix, and some were cracked or broken. This may be one reason why hard grinding increases the diastatic activity of flour.

It may be interesting to examine the mechanism of swelling. The starch granules contain millions of starch molecules $(C_6H_{10}O_5)n$. Their molecular weight, estimated at 5,000, is large compared to that of water, which is 18. Swelling takes place when these water molecules enter in among the large starch molecules and pry them apart. The boiling in water does not swell the granules to the bursting point except in the case of a few granules which have been injured. A starch paste is merely a suspension of swollen starch granules in water and cannot be made unless the proportion of starch and water is suitable. Such paste can be made only when most of the granules are intact, and not when most or all the granules have been crushed.

In bread baking there is very little gelatinization or swelling, principally because the amount of water is insufficient. Hall (1930) observed that if one part of water and two parts of starch are mixed and then heated at the temperature of boiling water, the starch remains white, but each granule has increased somewhat in size. If the water is equal to that of starch, and the heating is the same, the white color will disappear and the whole mass will become transparent, with the granules more swollen. In bread dough the water is 40% to 45%, and hence is only enough to bring about comparatively slight alteration.

The pastes made from the starches prepared from several classes of wheat differ greatly in viscosity (Alsberg 1927). Water suspensions containing somewhat over 5% of starch were heated gradually to 90° C, at which temperature the viscosities were determined. The viscosities obtained, together with the percentages of protein in the different classes of flour from where the starches were obtained, are given in Table I.

TABLE I
Viscosities of Starches and Percentages of Protein in the Flour From Which the Starches Were Obtained

Classes of flour—	Centipoises, or units of viscosity	Protein %
Soft red winter	213.5	8.4
White Club winter	178.5	8.7
Hard red winter	137.5	9.8
Soft red winter	135.0	9.0
Durum	132.0	11.0
Hard red spring	124.5	9.5
Hard red spring	105.5	9.5
Hard red winter	105.5	10.6
Soft white spring	100.0	8.8
Dicklow Club	91.0	11.8
Marquis	51.0	12.4

This table shows a very wide range in viscosity, since the highest value is over four times the lowest. There seems to be no relationship between the protein content of the flour and the viscosities of the starch pastes, but the figures do indicate large differences in the responses of the starches to treatment with water. The temperature of 90° C is about that attained in the interior of the loaf while baking. The per cent of water in the pastes was, however, many times that in dough.

This Is the Final Article in the Series, "Some Physical and Chemical Properties of Starch."

What the figures may mean in baking quality is an unsolved problem. They do, however, indicate that there are significant differences in the starches of various wheat flours. Several writers have emphasized the probable importance of starch in bread making. Alsberg (1927) emphasizes that it would be well for cereal chemists to cease ignoring the part which starch plays in determining the characteristics of flour and bread. While the study of wheat protein or gluten may be their major problem, it should not be forgotten that starch helps to give flour its character.

Harris and Sebbith (1941) have recently made studies on the influence of starches from different wheats on loaf characteristics. Starches were prepared from 20 flours which had been experimentally milled. The varieties represented the hard red winter, the hard red spring, the soft red winter, the durum and the white wheat classes. Synthetic flours were prepared from these different starches, using the same dried and powdered gluten for each starch. This gluten was prepared from a commercial 12.2% protein hard spring wheat flour, and contained 69.8% crude protein on the 13.5% moisture basis. These synthetic flours made with the starch-gluten mixtures were prepared so as to have three protein levels, namely 10%, 13.2% and 16.0% for each starch.

TABLE II
Loaf volumes from synthetic flours and flours from which the starches were made.

Also protein content of starches and of the original flours.

	Loaf volumes		Protein	
	Synthetic flours	Original flours	Starches	Original flours
HRS varieties—	cc	cc	%	%
Thatcher	188	910	0.65	16.6
Rival	173	685	0.59	14.0
Mercury	173	680	0.71	13.4
Premier	170	685	0.53	15.0
Vesta	143	490	0.47	11.3
HRW varieties—				
Kanred	180	616	0.52	12.3
Chiefkan ('38)	180	510	0.48	10.5
Nebred	174	780	0.51	16.2
Cheyenne ...	165	655	0.52	14.6
Blackhull ...	160	715	0.41	15.8
Chiefkan ('39)	155	655	0.44	15.3
Turkey	153	720	0.51	16.9
Tenmarq	147	595	0.45	13.2
SRW varieties—				
Wabash	214	485	0.49	8.6
Trumbell	178	469	0.44	8.5

A summary of the data obtained is given in Table II. The smaller loaf volumes obtained on the synthetic flours are due mostly to the fact that the doughs were made from 25 grams as compared with 100 grams used of the original flours. It is therefore necessary to compare the loaf volumes obtained from the synthetic flours among themselves. It should be noted that these starches contained around 0.5% protein, but the protein in the starches bears no relationship to the protein in the flours from which they were made.

The best loaf volume of the synthetic doughs was from the starch prepared from the flour of the soft winter wheat Wabash, followed by the starch from the spring wheat Thatcher. The starch from Trumbull produced a loaf volume a little above the three spring wheat varieties, Rival, Mercury and Premier. The lowest loaf volume of all was obtained from the starch of the Vesta wheat.

Among the hard winter wheat varieties, the starches from Kanred, Chiefkan (crop of '38) and Nebred gave loaf volumes considerably larger than and equal to the average of the four superior spring wheat varieties. The starch from Chiefkan crop of '39 produced a loaf volume distinctly smaller than that from Chiefkan of the crop of '38. The starches from Turkey and Tenmarq produced the smallest loaf volumes among the winter wheats.

Whatever else the results in Table II may mean, they do show that the starches in different wheat varieties apparently have an influence on the baking results. The data place new emphasis on the contention of Alsberg that the part which starch plays in giving bread its character should not be ignored.

Literature Cited

Alsberg, C. L., and Griffin, E. P.
1925. The effect of fine grinding upon flour. Cereal Chem. 2:325-344.

Alsberg, C. L.
1927. The role of starch in bread making. In Walton's comprehensive survey of starch chemistry. Chem. Cat. Co., New York.

Alsberg, C. L.
1926. Studies upon starch. Industrial Engineering & Chem. 18:190-2.

Alsberg, C. L., and Rask, O. S.
1927. A viscometric study of wheat starches. Cereal Chem. 1:7-26.

Alsberg, C. L.
1927. Starch in flour. Cereal Chem. 4: 485-492.

Alsberg, C. L.,
1935. Starch and flour quality. Wheat studies of the Food Research Institute. 11:No. 6.

Armstrong, E. F., and Armstrong, K. F.
1934. The carbohydrates. Longmans, Green & Co., New York.

Buchanan, J. J., and Naudin, G. G.
1923. Influence of starch on the strength of wheat flour. Ind. and Eng. Chem. 15:1050-51.

Grewe, Emily, and Bailey, C. H.
1927. The concentration of glutenin and other types of proteins in various types of wheat flour. Cereal Chem. 4:230-247.

Hall, H.
1930. A comparative study of the non-gluten constituents of hard and soft wheat flours. Cereal Chem. 7:270-280.

Harris, R. H., and Sibbitt, L. D.
1941. The comparative baking qualities of starches prepared from different wheat varieties. Cereal Chem. 18: 585-604.

Stamberg, Olaf E.
1937. Starch as a factor in dough formation. Cereal Chem. 16:769-780.

THE GRIN-MIX

FIZZ

The private, Sisson by name, was up for court-martial. Unfortunately he stuttered.

"What is your name?" asked the presiding office.

"S-s-s-s-sis-sahs--." He was growing red in the face.

"What is this man charged with?" demanded the presiding officer.

"Well," remarked another officer, "I think it must be soda water!"

CAN'T BE DONE

Wifey.—I wonder if I'll live to be 100.

Hubby.—Not if you remain 35 much longer.

AHEM

Traveler.—I left a bottle of Scotch in the train this morning.

Conductor.—Was it turned in to the Lost and Found Department?

Traveler.—No, but the fellow who found it was.

NATURALLY

Diner.—Waiter, take this chicken away. It is actually so tough it seems to be made out of stone.

Waiter.—Nothing strange about that, sir. It's a Plymouth Rock.

NO OFFENSE

The Judge.—This lady says you tried to speak to her at the station.

Student.—It was a mistake. I was looking for my roommate's girl, whom I had never seen before, but who's been described to me as a handsome blonde with classic features, fine complexion, perfect figure, beautifully dressed and—

The Witness.—I don't care to prosecute the gentleman. Anyone might have made the same mistake.—*Punch Bowl.*

FREAKS

Jack.—I know a girl who swallows swords.

Joe.—Huh, I know a gal who inhales camels.

SITTING BACK

"There's that fellow who sought for years to get a political job."

"Well, what does he do now?"

"Nothing. He got the job."

REALLY ANGRY

Christy.—Just think! He had the cheek to kiss me.

Harriet.—You were furious, of course?

Christy.—Yes—every time.

DISGUSTING

Young Wife.—Harold is so slovenly. Half the buttons are generally missing from his clothes.

Severe Aunt.—H'm. Perhaps they are not sewed on properly.

Young Wife.—That's just it. He's awfully careless about his sewing.

MILL-O-Cide
LINE OF FOOD INSECTICIDES
MIDLAND CHEMICAL LABORATORIES, INC.
DUBUQUE, IOWA

BAGS
COTTON BURLAP
Specially Manufactured for
MIXED FEED MANUFACTURERS and FLOUR MILLERS
CENTRAL BAG & BURLAP CO.
IMPORTERS AND MANUFACTURERS
OFFICE AND FACTORY: 4513-4525 SOUTH WESTERN BLVD.
CHICAGO

Dust DAY Control
★ Pneumatic Conveying ★ Bag Cleaning Units
★ Flour Blending Tanks ★ Dual-Clone Dust Collectors
★ Exhaust Fans
THE DAY COMPANY
2938 Pillsbury Avenue, Minneapolis, Minnesota
In Canada: The Day Company of Canada, Ltd.

FOR GOOD Self-Rising FLOURS
Use Columbia Flour Blend Sodium Bicarbonate—and you're sure of good self-rising flours. Good from the production angle because of its free-flowing properties and freedom from caking. Good from the consumer's angle because this uniform blend of U.S.P. Sodium Bicarbonate is exceptionally pure.
COLUMBIA FLOUR BLEND SODIUM BICARBONATE
PITTSBURGH PLATE GLASS COMPANY
Columbia Chemical Division
30 ROCKEFELLER PLAZA
NEW YORK, N.Y.

THOMAS Robinson & SON LTD
Flour Milling Engineers
ROCHDALE
ENGLAND
Representatives in Canada and USA:
KIPP-KELLY LTD.
68 Higgins Avenue
WINNIPEG

If You Manufacture Cake Flour . . .

Cake Flour and Granulation

You Should Know These Latest Developments

PROBABLY the most important discovery so far made with regard to flours intended exclusively for cake baking has to do with particle size, or granulation. The statement that this is an important factor is not new, of course. However, it has been only rather recently that the "why" of granulation's importance was made plain. Attendant upon this was the discovery that certain practices in the manufacture of cake flour were either unnecessary or, sometimes, harmful.

For example, it has been realized for some time that, generally speaking, flours with very small particle sizes are superior for cake-making purposes—provided that the wheats from which they were made have suitable characteristics. In past practice, the sections from which cake flour streams were to be drawn have often been made very fine—14XX, 15XX or even 16XX. Successful millers of cake flour now largely agree that this is unnecessary and poor practice. Several who have been queried state that they now use 12 and 13XX. They insist that heavy grinding will produce a large amount of flour fine enough to pass through a 15XX, even when bolted on 11XX in the sifters.

In good practice, rebolters are usually used. Sometimes these are centrifugal reels and sometimes sifters. Most of the millers contacted state that they prefer the high-speed, short-throw machines. Either 14 or 15XX is used for rebolting and there is, of course, quite a tailover. Here's where new practice comes into the picture.

In the past, a good many millers have returned this tailover to the head middlings rolls, expecting a large percentage of it to be reduced. The reduced material would then be re-incorporated in the cake flour. This is distinctly a mistake. And here is the reason:

Recent data gathered by chemists have proved that the larger particles produced when heavy grinding is practiced will not, when they are reground, yield a fine flour similar to the *original* fine flour. This is because the finer particles produced by the head breaks and head middlings are composed of materials easily reduced—the parts of the berries having the most fragile nature. This type of fragility is essential to a cake flour of high quality. It must be made of wheat berries—or those parts of wheat berries—which will yield a tender gluten with a relatively low viscosity.

One miller states that he uses these streams for his cake flour: sizings, first, second and third midds, and second break. The sections are clothed with 11-, 12- and 13XX, and all these streams are rebolted together on a high-speed sifter clothed with 14XX. The tailover of this rebolt is returned to the milling system at the *fourth middlings* reduction. When they are reduced they will not get back into the cake flour stream.

The percentage of flour that will be recovered by taking the streams mentioned cannot be predicted, for it will depend upon grinding methods as well as upon the nature of the wheat ground. This would be true also of the protein and the viscosity of the flour. As a matter of fact, some types of cake require one viscosity while other types need another. One miller states that he attempts to keep all his cake flour close to 45° MacMichael.

It is necessary first to learn what the customer wants. Then, if all the millstream flours that might possibly be used in a cake flour are analyzed for protein, viscosity and ash, the miller will know which, or what percentage of which, to use. Usually the first break is lower in protein and viscosity than the second break, while the third break is considerably higher. The first midds is higher in both protein and viscosity than the second break, while the second and third midds are higher in both. The sizings is usually lower in protein and viscosity than the first break, soft wheat being considered.

Cake flours are universally treated with Beta Chlora. It is usually thought good practice for cake flours to have a pH of about 5.2. The same flour having a pH 5.9 (which is a lower hydrogen-ion concentration than 5.2) bakes inferior cakes. The same flour with 5.9 would usually be better for biscuits.

DIABLEND

Top Quality

Malted Wheat Flour

It is essential that your hard wheat flours bake consistently to your established standards. But improper diastatic treatment can spoil your most careful wheat-selection and milling methods.

DIABLEND malted wheat flour assures you of uniform quality and quantity of diastatic action. Selected wheat is malted in our own malt plant under automatically controlled atmospheric conditions. DIABLEND is manufactured to a standard level of maltose, milled so it is free flowing for accurate feeding.

We will provide samples for experimental work in your own laboratory, or you may send to us samples of your untreated flours for analysis. Maltose or gassing power analyses in our laboratory are free to DIABLEND users. Ask for a sample and quotation of DIABLEND today.

B. A. ECKHART MILLING CO.

1300 W. CARROLL
CHICAGO, ILLINOIS

Belts

(Continued from page 9a.)

It is generally advisable to clean belts at least every six months and then apply a special grease that will give the surface a clean sticky pulling power such as it possessed when new. Grease in a new belt becomes exhausted after the belt has been in service for a while as a result of heat, friction and atmospheric conditions. The application of additional grease is necessary to keep the belt in a soft and pliable condition.

A grease consisting of two lbs of edible beef tallow and one lb of cod liver oil, such as is used at the factory when belts are manufactured, is recommended. The tallow is melted and allowed to cool slightly, after which the cod liver oil is added and the mixture stirred in one direction until cold. It should be applied in light coats with a camel's hair brush.

Rosin will prevent temporary slipping of a belt but is very damaging to the material. It should be used only when no other course is open.

If the tension on a belt is higher than it should be the condition can be easily noticed, because the outside surface of the belt will tend to crack.

Read these brands from ten feet away

Place this advertisement ten feet away and look at the brands on the two flour bags. Notice how much easier it is to identify the larger brand. This is comparable to what takes place when a shopper looks at flour in a retail store. Isn't it important your brand be large enough to be identified from any distance in the store?

PARADE YOUR PRODUCT ...THE BEMIS WAY

BEMIS BRO. BAG CO.

OFFICES:
Boston, Brooklyn, Buffalo, Chicago, Denver, Detroit, East Pepperell, Houston, Indianapolis, Kansas City, Los Angeles, Louisville, Memphis, Minneapolis, New Orleans, New York City, Norfolk, Oklahoma City, Omaha, Peoria, Pittsburgh, St. Louis, Salina, Salt Lake City, San Francisco, Seattle, Wichita

LET'S GO! U.S.A. KEEP 'EM FLYING!

Modern Power Transmission

By W. A. Crooks
The Medart Co.

MODERN power transmission can be defined in simple terms as nothing more than the proper combination of anti-friction bearings, balanced pulleys, improved couplings and V-drives, etc., which will make the most efficient and economical mill drives. The drive problems of one mill are generally the problems of all mills. However, individual mill conditions often vary, with the result that what has worked successfully in one mill may not work successfully in another. For this reason it is a good policy to treat each drive problem individually, instead of collectively. All mill owners are interested in making more money, and it has been definitely proved that mill profits can be increased by replacing out-of-date transmission with modern transmission. Increase in profits can be accomplished in two ways—by lowering costs or by increasing production. Modern power transmission will increase profits by both lowering costs and by increasing production.

I am going to briefly describe to you what, in my opinion, are some of the important points that should be kept in mind when you contemplate buying replacement or new power transmission equipment. First, the most important factor in lowering costs, or, if you please, the most important money maker, is the anti-friction bearing. Mills use anti-friction bearings as hanger bearings, as pillow blocks, and as roll bearings. The anti-friction bearing will absolutely reduce friction losses, help maintain shaft alignment, and reduce repair and maintenance costs to a minimum. Quite often I am asked by a miller what I consider the best type of anti-friction bearing. I generally answer that question by saying that, just as there is no one all-purpose bore for a shotgun, there is no anti-friction bearing that can be considered suitable for all purposes. Each type of anti-friction bearing has its advantages as well as its limitations. For example, the ball bearing is considered the finest bearing for high speeds. The Timken bearing has the advantage of being able to carry a thrust load as well as a radial load, but is not considered suitable for extremely high speeds. Roller bearings are not satisfactory for high speeds either, but are recommended and widely used for radial loads. Roller bearings will often withstand shock loads that would ruin either ball or Timken bearings. So, you see, the proper type of bearing for mill service should be selected only after careful analysis of the service for which it is to be used. That is why a miller should consult a power transmission engineer whenever any anti-friction bearing problems arise.

The second item that I would like to have you consider is pulleys. There are a number of types, including cast iron pulleys, wood pulleys, pressed steel pulleys, steel rim pulleys and iron spider wood rim pulleys. Of these, the most popular and most widely used is the cast iron pulley. It is not affected by climatic conditions, as are wood pulleys; it does not rust as do steel pulleys; and it can be more easily balanced then any of the other types. All pulleys should be balanced both statically and dynamically, whenever the belt speeds exceed 4,000 feet per minute. A true running pulley eliminates stresses and strains on hangers, bearings and shafting, and prevents excessive maintenance expense. Automobile manufacturers equip their cars, today, with balanced wheels and their directions for proper maintenance of the automobile urge that the automobile wheels be periodically balanced to avoid excessive bearing and tire wear. Just as the automobile manufacturer knows the importance of balancing automobile wheels, power transmission engineers know the importance of pulley balancing, and millers should insist that all the pulleys they buy be balanced.

Couplings for mill service can generally be divided into two classes, namely, rigid and flexible. Rigid couplings are used where positive shaft alignment can be maintained. They are generally made of cast iron, fitted to the shafts at the factory, and then machined all over to make them run true. Plain rigid couplings are commonly used, although some are furnished with spacer plates, and others with tongue and groove. Another type of rigid coupling is the keyless coupling, which clamps to the shaft without the use of keys. The proper selection of a rigid coupling depends, of course, upon the particular requirement. Flexible couplings are used where shafts are not

DULUTH—THE "AIR-CONDITIONED" CITY

The summers in Duluth, Minn., are "air-conditioned," yes. But the city is famed for more than that! For one thing, it is the fifth largest grain storage center in the United States. Of its 46,925,000 bus of storage capacity, the four elevators shown in this picture represent 22,700,000 bus. They are, from the left, the Consolidated Elevator Co., the Capitol Elevator Co., the Occident Terminal Co. and the Duluth Peavey Terminal.

Each of these plants has been recently appraised by Appraisal Service Company engineers.

Appraisal Service Company
INCORPORATED
Minneapolis Minnesota
APPRAISERS TO THE MILLING AND GRAIN TRADE

QUALITY BAGS . . . . FOR QUALITY FLOUR

Eagle Bleached BAGS

Fulton's Superior Printing and Design Increase the Value of the Excellent Display Space on the Surface of Your Bags.
In Addition to Standard Containers We Offer Premium Packages with Sales Appeal.

FULTON BAG & COTTON MILLS
Manufacturers Since 1870
Atlanta St. Louis Dallas Minneapolis New York New Orleans Kansas City, Kans.

A WAR MESSAGE
to
ALL EMPLOYERS
★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, in materials, and in money! Every dollar, every dime that is not urgently needed for the civilian necessities of food, clothing, and shelter, must, if we are to secure final Victory, be put into the war effort.

An important part of the billions required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular, week by week, pay-day by pay-day investment of the American people can this be done.

This is the American way to win. This is the way to preserve our democratic way of life.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in a

PAY-ROLL SAVINGS PLAN

The Pay-Roll Savings Plan is simple and efficient. It provides, simply, for regular purchases by your employees of United States Defense Bonds through systematic—yet voluntary—pay-roll allotments. All you do is hold the total funds collected from these pay-roll allotments in a separate account and deliver a Defense Bond to the employee each time his allotments accumulate to an amount sufficient to purchase a Bond.

The Pay-Roll Savings Plan has the approval of the American Federation of Labor, the Congress for Industrial Organization, and the Railroad Brotherhoods. It is now in effect in several thousand companies varying in number of employees from 3 to over 10,000.

In sending the coupon below, you are under no obligation, other than your own interest in the future of your country, to install the Plan after you have given it your consideration. You will receive—1, a booklet describing how the Plan works; 2, samples of free literature furnished to companies installing the Plan; 3, a sample employee Pay-Roll Savings authorization card; and 4, the name of your State Defense Bond administrator who can supply experienced aid in setting up the Plan.

To get full facts, send the coupon below —today! Or write, Treasury Department, Section B, 709 Twelfth St., NW., Washington, D. C.

HOW THE PAY-ROLL SAVINGS PLAN HELPS YOUR COUNTRY

1. It provides immediate cash now to produce the finest, deadliest fighting equipment an Army and Navy ever needed to win.
2. It gives every American wage earner the opportunity for financial participation in National Defense.
3. By storing up wages, it will reduce the current demand for consumer goods while they are scarce, thus retarding inflation.
4. It reduces the percentage of Defense financing that must be placed with banks, thus putting our emergency financing on a sounder basis.
5. It builds a reserve buying power for the post-war purchase of civilian goods to keep our factories running after the war
6. It helps your employees provide for their future.

MAIL THIS COUPON NOW

Treasury Department, Section B
709–12th St., NW.
Washington, D. C.

We want to do our part. Please rush full information regarding the Pay-Roll Savings Plan.

NAME .....
POSITION .....
COMPANY NAME .....
ADDRESS .....
NUMBER OF EMPLOYEES .....

MAKE EVERY PAY-DAY . . . BOND DAY!
U. S. Defense BONDS ★ STAMPS

This space is a contribution to NATIONAL DEFENSE by The Northwestern Miller.

GPO 16—25943-1 Form No. DSS-BP-2

AN ANNOUNCEMENT

WE ALL KNOW MILLING IS AN ESSENTIAL INDUSTRY

• In milling, as in many other industries, war has brought fresh problems to employer and employee alike. Maintenance of an efficient, trained operating personnel is one of them. . . . .

Many of the men who have enrolled in the "Correspondence Course in Practical Milling" have been called to the colors. Others who have contemplated enrollment are uncertain as to how long they might be able to continue their studies and their jobs.

Because of this situation, a plan through which the sponsors of the Course hope to be of still greater service to members of the production personnel of mills, to the milling industry—and, thus, to the nation—has been devised.

The "Correspondence Course in Practical Milling" is divided into four units of twelve lessons each. The fee for each unit, payable in advance, is $15; this is insufficient to cover more than clerical work, printing, and postage. Yet each student is given individual service in the grading of his answers to the examination questions accompanying every lesson. The program is possible only because neither Dunwoody Industrial Institute, which is an endowed school, nor the co-sponsors of the course, the publishers of *The Northwestern Miller* and *Milling Production,* receive profit from the work.

Here is the new offer. When a student of the course enters the armed services of the country before he has completed all the lessons of the unit, the lessons may be transferred to another man in the plant. The new student may proceed with the study of the unfinished lessons *after* he has sent in his own answers to the transferred lessons and received a passing grade on them. There will be no charge for this. If he satisfactorily completes the unit he may enroll for subsequent sections of the course. And when the original student is once again ready to take up his job, full credit will be given for the work he had previously completed.

For full particulars, write Dunwoody Industrial Institute, 816 Wayzata Blvd., Minneapolis, Minn.

★ ★ ★ ★ ★ ★ ★ ★ ★

A VOCATIONAL TRAINING RECORD CARD

With the authorization of the Federal Security Agency and the War Department, any student completing a course offered by Dunwoody Industrial Institute will receive a vocational training record card. This card, signed by a school official, will certify that the student has successfully completed training in the course, or courses, listed on the card. It is designed with the dual purpose of helping him gain in either civilian or military life the type of work or service for which his vocational training has best prepared him.

★ ★ ★ ★ ★ ★ ★ ★ ★

in alignment. They have been vastly improved in recent years, and new ones are constantly being developed. Each has certain qualifications that make it especially suitable for specific applications. Flexible couplings definitely demand a careful analysis of the service expected, before an intelligent recommendation can be made. Just as the proper coupling can give years of trouble-free service, the wrong coupling can give many a headache. So if there is any doubt about the type of coupling necessary for the job, I suggest that you call in a power transmission engineer to help you.

Another important item is the V-drive, which has become one of the most popular of modern drives. V-drives are generally used on prime movers; that is, from motor to line shaft, or from motor to machine. It is a very satisfactory type of drive when carefully engineered, and will prove efficient and economical. V-drives should always be planned drives. Every factor should be carefully considered so that the drive will function properly and that the V-belts will have long life. And, where center distances are great, it is advisable to use a belt tightener which will increase belt wrap on the sheaves and which will maintain the correct belt tension. A good belt tightener for this purpose is one equipped with anti-friction bearings in the pulley. There are many such good types of belt tighteners on the market, especially designed for this purpose.

v v

Editor's Note.—Mr. Crooks's paper was read before a recent meeting of District 2, Association of Operative Millers.

C. G. Beetlebug

(Continued from page 11a.)

"A woman's intuition," she replied, and dropped her eyes at my flattery.

Flattery, yes, but the chemist's note was an omen we recognized. Fortification was necessary. "We know our eggs" and we were prepared for any invasion! Throughout the mill, to our evergrowing outposts, we sent warning of the dangers soon to come! Defend our stronghold against aggression! If the management had discovered their flour was an easy prey for bugs, we must prepare to combat their so-called "deadly" weapons of gas and 'cides, which they were sure to use. Yes, we prepared, and built burrows deep into the flour paste in the bottom of our home. We took every precaution it is possible for the insect mind to contrive, to insure life through the coming ordeal.

We were ready when the blow fell. But the intensity of that blow was unbelievably severe. The protection we threw up was flimsy and fragile against it. Deep down into our burrows we slid and deeper came the toxic fumigant. It was positively deadly!

There is much that is tragic and bitter and too sad to relate. Memory of horrible experience of awakening from a deathlike slumber is nauseating. In a few days my strength returned and a week later I was strong enough to make my way up to the light and air and sunshine again. But I was a widower; my family had perished! My best efforts to avoid annihilation were in vain, for them. Only the hardy strain of lusty ancestors which flows in my veins saved me from doom.

Now I've learned my lesson. It is going to take a great effort on my part, but I must make it to survive. A trip to the next A.O.M. convention is my plan. As an unregistered delegate, I will be especially interested in the latest developments of science to destroy me. Combating the newest insecticides will be my forte.

And who knows? I may find there another survivor who would fain become the second Mrs. Beetlebug. We could start a home which to me has always meant a nice comfortable lounge in a cozy corner, an abundant supply of food, preferably several varieties, and—

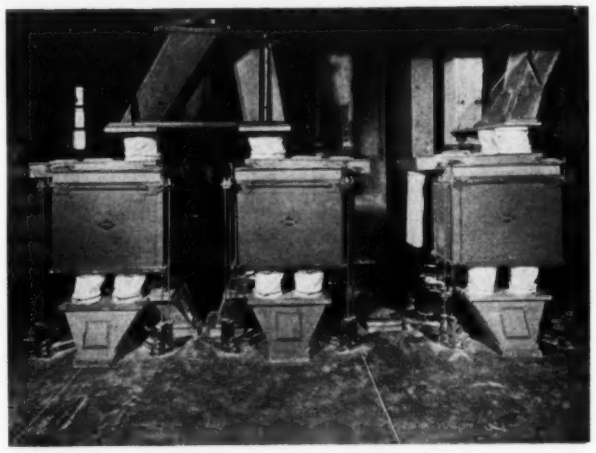
——BREAD IS THE STAFF OF LIFE——

"Considering firstly the wheat itself, the actual amount of flour contained by the grains in proportion to the amount of skin must have a preponderating influence on the percentage of flour which can be obtained. Thin-skinned wheat would obviously contain proportionally more flour than thick-skinned wheats of equal grain size."—Scott, in "Flour Milling Processes."

NIAGARA

GYRO-WHIP SIFTERS

PATENTED



REDUCE CLOTHING COSTS

Efficient mesh cleaning, coupled with the very nature of its speed and throw, enables any one of our standard models to handle large capacities on less than one-third the free bolting surface used in conventional level sifters and reels. In view of the shortage of raw materials in silk manufacture, and the difficulty in importing the silks from abroad, it is of vital importance to the industry that every miller do his share in conserving as much cloth as he can. Plan now to reduce your silk consumption by installing Niagara High-Speed Sifters to replace your old bolters and reels.

USE LESS POWER

With the increasing practice of deriving power from the public supply, with the elimination of private generating plants, the modern miller, in addition to his routine duties, must also pay attention to the power factor in his mill. War conditions are due to cut this power allowance. Conscious of this trend, there has been an increasing adoption of the short throw, high speed, fractionally powered Sifters to supersede old style reels, and obsolete bolting equipment. In this connection, Niagara Gyro-Whip Sifters have been outstanding.

Write today for full Information. DON'T DELAY!

RICHMOND MFG. COMPANY

LOCKPORT, N. Y.

Manufacturers of

High Speed Sifters, Permaflux Magnets, etc.

PAUL UHLMANN, President RICHARD UHLMANN, Vice President JACK A. BENJAMIN, Secretary-Treasurer

UHLMANN GRAIN COMPANY

CHICAGO, ILL. • KANSAS CITY, MO.

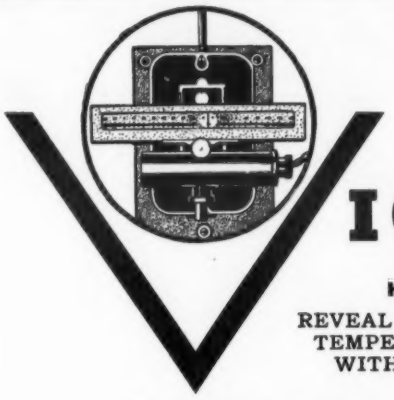
OPERATING

KATY *and* WABASH ELEVATORS

Total Capacity 7,200,000 Bushels

Members of the following Exchanges:
Chicago Board of Trade
Kansas City Board of Trade
Minneapolis Chamber of Commerce
New York Produce Exchange
Winnipeg Grain Exchange
Duluth Board of Trade
Fort Worth Grain and Cotton Exchange
New York Rubber Exchange
New York Coffee and Sugar Exchange
New York Cotton Exchange
New York Cocoa Exchange

OFFICES:
New York City
Chicago, Ill.
Kansas City, Mo.
Enid, Okla.
Fort Worth, Texas
Amarillo, Texas



VICTORY

AGAINST THE HIDDEN HAZARD OF OVERHEATING

REVEAL AT A GLANCE THE EXACT TEMPERATURE OF YOUR GRAIN WITH A ZELENY SYSTEM IN YOUR BINS

Write to-day for complete money saving facts

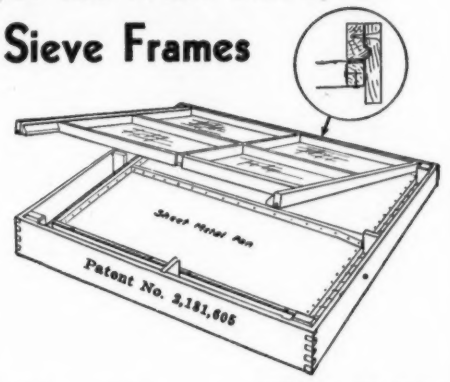
ZELENY THERMOMETER COMPANY
9 South Clinton Street CHICAGO, ILL.

Some Reasons for the Wide Use of

NOR-VELL Sieve Frames

- Increased Bolting Capacity
- Last Longer
- No Joint Wear
- Made to Fit Any Square Sifter
- Immediate Delivery

Ask for Particulars



NOR-VELL SIEVE CO. • 1510 W. 29th Street Kansas City, Missouri

A. E. BAXTER ENGINEERING CO.
Designers and Engineers for Mills, Elevators and Feed Mills
344 DELAWARE AVENUE BUFFALO, NEW YORK

ANALYSES
FLOUR FEED WHEAT
PROMPT ACCURATE LABORATORY SERVICE
THE MID-WEST LABORATORIES INC.
STA.A. BOX 271 COLUMBUS, OHIO

PAPER SACKS FOR MILLERS
The Chatfield & Woods Sack Co.
CINCINNATI, O.

• GRAIN CLEANING MACHINERY •
HAAKY
MANUFACTURING CO.
509 Vandalia St. ST. PAUL, MINN.

INDUSTRIAL CHEMISTS
Flour, Grain and Feed Analyses
- THE -
COLUMBUS LABORATORIES
31 North State St. Chicago, Ill.

Flour Exchange The J. K. HOWIE CO. Minneapolis, Minn.
SOLE DISTRIBUTOR IN THE NORTHWEST FOR
GREENING WIRE CLOTH
PROMPT SERVICE and SATISFACTION GUARANTEED

★ The Esmueller Co. ★
ST. LOUIS, MO. KANSAS CITY, MO.

The BARNETT & RECORD CO.
MINNEAPOLIS, MINN.
DESIGNERS *BUILDERS*
Grain Elevators—Mill Buildings—Industrial Plants

Thiamin Retention in Biscuits

(Continued from page 3a.)

baking is followed by a rapid drop after 7 to 8 minutes to slightly above the final pH. The time at which the maximum pH occurs is of brief duration and coincides with the attainment of a temperature of 85-95° C. within the biscuit.

TABLE II

Effect of Acidity and Alkalinity on Thiamin Recovery in Self-Rising Flour Biscuits Made With Water

	*Anhydrous		†Monohydrate	
Neutralizing value	Biscuit pH	Thiamin recovery, %	Biscuit pH	Thiamin recovery, %
100.....	8.3	49	8.4	28
90.....	7.7	76	7.7	60
80.....	7.3	81	7.3	67
70.....	7.0	85	7.0	82
60.....	6.7	91	6.7	80

*Anhydrous calcium acid phospate+soda =3% of flour weight. †Calcium acid phosphate monohydrate +soda=3.625% of flour weight.

TABLE III

Maximum pH Attained in Biscuits During the Baking of Self-Rising Flour Doughs

Self-rising flour formula					
Soda %	Phosphate %	Salt %	Liquid used in baking	Maximum pH during baking	pH of fully baked biscuit crumb
(Anhydrous)					
1.25	1.5	2.0	Water	7.5	7.3
1.25	1.5	2.0	Milk	7.35	7.2
1.25*	1.75	2.0	Milk	7.1	6.9
(Monohydrate)					
1.5	1.875	1.75	Water	8.25	7.25
1.5	1.875	1.75	Milk	7.75	7.2
1.5*	2.125	1.75	Milk	7.3	7.0

*Enriched self-rising flour formulas recommended.

It will be observed in Table III, representing water biscuits, that phosphate of the monohydrate type causes a distinctly alkaline condition to exist temporarily during baking, whereas the anhydrous phosphate causes only a slightly alkaline condition.

Table IV supplies thiamin recovery values with biscuits baked under like conditions. It may be concluded that reactions of the anhydrous phosphate with soda within the baking biscuit are more favorable to the retention of thiamin. The use of milk in place of water reduced the maximum pH attained with both types of phosphates and materially improved thiamin retention. The most favorable conditions existed in milk biscuits made from self-rising flour, as proposed for enrichment purposes.

The formula for the commercial manufacture of enriched self-rising flour should be such that an optimum retention of thiamin will be obtained in the baked biscuits. It would not be practical commercially to mix self-rising flours so that a pH of say 6.5 would be obtained in those made with water as this acidity would tend to result in a slightly metallic acid taste and the cost would be excessive. A pH of 7.1 in biscuits made with water seemed a suitable value. Table IV presents comparative results of bakings made with the present standard formulas and by enriched flour formulas proposed for self-rising flours. Both water and milk biscuits were baked in duplicate twice; the average recovery values represent four separate bakings with triplicate assay on each set. It will be noted that milk biscuits resulted in pH values 0.2 unit lower than water biscuits and retained an average of 6% more thiamin. There was less spread in thiamin recovery between water and milk biscuits when the self-rising flour contained the anhydrous phosphate rather than the monohydrate. The proposed self-rising flour formulas in which 0.25% additional calcium acid phosphate is included with the present standard formulas resulted in thiamin recovery of 85% when biscuits were made with milk as the liquid.

The thiamin value of enriched self-rising flour biscuits when baked under conditions favorable to the optimum preservation of thiamin may be approximated. For practical purposes 80% to 85% of the added thiamin may be used for calculating thiamin in biscuits. The loss of 15% to 20% of the 2.16 mg. added per pound of flour, or 0.32 mg., represents approximately the amount of native thiamin in flour, so that the original amount of thiamin added is the amount in the final biscuit.

Thiamin recovery may vary somewhat with the type of baked product, but it appears that optimum retention will be attained if the pH does not become greater than 7.1-7.2 during the baking process. It will be of interest to compare the results reported here with those obtained with other self-rising flour products.

It may be predicted from this work that the use of phosphated flour instead of plain flour will improve greatly the retention of thiamin in biscuits made with baking powders as most baking powders result in biscuits considerably above 7.0 pH.

In summarizing, it may be said that the recovery of thiamin added to self-rising flour doughs is shown to be in proportion to the acidity of the biscuits; the lower the pH, the better the recovery. About 85% of the thiamin added survives the baking process if the pH of the baked product is 7.1 or lower.

Commercial self-rising flour formulas, if revised so as to include 0.25% additional calcium acid phosphate in the formula for enriched self-rising flour, would result in optimum retention of thiamin in the finished biscuits.

The use in self-rising flour of calcium acid phosphate of the anhydrous type results in slightly less loss of thiamin during the baking process than the use of the monohydrate. Biscuits made with milk show better thiamin retention than those made with water. Baking conditions and methods of dough preparation have no appreciable effect on thiamin re-

TABLE IV

Thiamin Recovery in Biscuits Made From the Proposed Enriched Self-Rising Flour Formulas and the Present Standard Commercial Formula

(Each test represents triplicate assays on duplicate bakings)

Formula	Soda %	Calcium acid phosphate %	Salt %	Liquid	Test 1 pH	Test 1 Recovery %	Test 2 pH	Test 2 Recovery %	Average thiamin recovery %
		Anhydrous							
Standard	1.25	1.5	2.0	Water	7.4	76	7.3	78	77
Standard	1.25	1.5	2.0	Milk	7.3	78	7.1	84	81
Enriched	1.25	1.75	2.0	Water	7.0	87	7.1	77	82
Enriched	1.25	1.75	2.0	Milk	7.0	86	7.0	83	84.5
		Monohydrate							
Standard	1.5	1.875	1.75	Water	7.3	69	7.25	73	71
Standard	1.5	1.875	1.75	Milk	7.1	79	7.1	80	80
Enriched	1.5	2.125	1.75	Water	7.0	79	7.0	75	77
Enriched	1.5	2.125	1.75	Milk	6.9	89	6.9	80	84.5

covery provided a thin, crusty biscuit is not made.

ACKNOWLEDGMENT

The author is indebted to A. R. Wreath, who performed all assays for thiamin by the thiochrome method.

Literature Cited

American Association of Cereal Chemists 1941. Cereal Laboratory Methods (4th Ed.). American Association of Cereal Chemists, Lincoln, Neb.
Copping, A. M., and Roscoe, M. H. 1937. The Water-Soluble B-Vitamins in Yeast, Flour and Bread. Biochem. J. 31:1879-1902.

EDITOR'S NOTE.—This article by Mr. Barackman, who is associated with the Victor Chemical Works, Chicago, was adapted from the January issue of *Cereal Chemistry*.

Corn as Fuel

(Continued from page 4a.)

driven off as gas, the fixed carbon remaining in the form of coke. Hydrocarbons contain only carbon and hydrogen, while the carbohydrates, chief constituents of grains, are composed essentially of the three elements, carbon, hydrogen and oxygen. The element hydrogen is a "fuel," and when it combines with oxygen (in the ratio of 2 atoms of hydrogen to 1 atom of oxygen) a great deal of heat is liberated. The product of this combination is water—in the form of vapor at the moment of combining, since the heat of combination provides the heat required for vaporization.

All carbohydrates contain hydrogen and oxygen in the ratio of 2 to 1, and since this ratio exists in water, the mistake of considering water a constituent of the carbohydrate molecule is sometimes made. Because a correct understanding of this is important, an explanation made by Dr. C. O. Swanson, of the Department of Milling Industry, Kansas State College, is here presented.

The fact that carbohydrates contain hydrogen and oxygen in the same proportion as they occur in water, says Dr. Swanson, does not mean that water actually occurs in the carbohydrate molecule. The structural formulas for the carbohydrates show that a part of the hydrogen is linked with the carbon and a part with the oxygen. The combination is such, however, that when the carbohydrates are burned to completion the products of combustion are carbon dioxide and water. The linkage of the hydrogen and oxygen atoms is such that they seem to escape, at least to some extent, with comparative ease.

For this reason, heated carbohydrates will give off water. Consequently, when grain is heated to a rather high temperature in a Brown-Duval moisture tester the "manufacture" of water actually takes place. It is well known that the moisture determination is never absolute in organic substances, because before the last traces of water can be driven off, hydrogen and oxygen are liberated and combined to form water. Combustion of carbohydrates is a much more complicated process than is represented by the simple formula. For instance, the simple formula for the combustion of starch gives plus six molecules of oxygen with the products of five molecules of water and six molecules of carbon dioxide. Actually, the thing is much more complex.

The statement that a big part of the potential heat of corn to be used as a fuel would be generated in the coking chamber, with water as a by-product, if an attempt was made to char the grain, is correct. Handbooks do not give the calorific value of carbon or charcoal, but I have found the figures for graphite, which is a very pure form of carbon, to be 7.84 calories per gram. The heat value of starch is given as 4.178 calories per gram. If all the energy in combustion (heat of combustion) came from carbon and none from hydrogen, then the calorie figure for graphite should be *more* than twice as great as that for starch. Of course the explanation of the comparatively low calorific value of the total carbon in starch (about 44.5% by weight) is that some of the energy (heat) generated comes from the combustion of hydrogen, with water as a product of combustion.

——BREAD IS THE STAFF OF LIFE——

"There are various methods in use for measuring and to some extent recording flour color. One difficulty from which they all suffer is that of providing a permanent standard scale for purposes of comparison. There is also the difficulty that in all tests where values depend on matching of color or tint, the human element plays an important part, and it is possible for different observers to get widely different results or for one observer to vary in his readings from one day to another."—E. D. Simon, in "The Physical Science of Flour Milling."

——BREAD IS THE STAFF OF LIFE——

"What is the best kind of grind on reduction rolls? A detailed answer to this would naturally depend on which particular reduction was implied, but in general terms we can say that the best grind is that which gives maximum flour or fine middlings with the minimum flaking and production of bran powder. On the coarse tailings rolls it is largely a question of loosening the endosperm adhering to offal fragments and producing middlings for the following reductions."—Scott, in "Flour Milling Processes."

Looking Back

(Continued from page 7a.)

way. Maybe I'll tell you about that wheat tempering some other time, if you can take it, but we've got to move along and get to that 1914 war.

"In the summer of 1914 I was running second in another 600-bbl mill. I'd been there about two years, and I was looking around for a better job—which wasn't unusual in those times. This concern never did make any money, or so the president and manager said, and when I got a letter from the manager of a mill in another state, telling me that they had recently bought a 150-bbl mill and expected to remodel it and get it going, I didn't give him much peace until he'd agreed to give me the job of head miller.

"At the mill I was leaving they were milling just about exactly as they were in the 600-bbl mill I had worked in 3 years earlier— in 1911, thirty years ago just about now. Only we did have a device which was supposed to put just so much water on each pound of wheat, and it did a pretty good job of it, too. No-

IT'S EASIER TO KNOCK OUT A REGIMENT... THAN TO ANNIHILATE AN ARMY

That's why the DOLLAR you spend to stop pests this month may save you FIFTY Dollars later on, when Spring gets in the air.

Right now the bug population is relatively low, but it won't stay that way long. SO . . . you'd be wise to take these definite Larvacide measures to forestall that Spring invasion.

1—SPOT TREATMENT of Machines where signs of trouble are seen. With Larvacide, it isn't necessary to treat the whole mill when the trouble is merely local.

2—TREAT SUSPICIOUS INCOMING GRAIN —Don't let the other fellow's pests become your guests.

3—TREAT ALL RETURNED SACKS. This is always a wise measure. Also, new sacks are likely to be hard or impossible to get so take care of those you have. Fumigate ALL returned sacks in a vault.

REMEMBER—Larvacide kills the egg-life and larva too.

4—INITIATE RATS into the Larvacide Club. The initiation is on the wholesale plan. Larvacide follows these pests down into retreats, drives them out to die on the open floor, usually without carcass nuisance, and light traces linger in retreats to discourage new tenants.

WISHING WON'T DO ANY GOOD—ACT—and Act NOW

Write for the Larvacide Program, which is solving the pest problem in mills of every size and type. If yours is a large mill, ask for blue print of the LARVACIDE PIPING SYSTEM. Your millwright can install this and you'll be all set to do in minutes what used to take hours. NOTE: Many mills still prefer the Manual Method to meet their particular conditions. Larvacide comes in cylinders 25-180 lbs. and in 1 lb. bottles, convenient for Spot Treatments and Rodent work. Each bottle is in safety can, 6 and 12 to wooden case.

Larvacide
ETHYLENE

is a tear gas fumigant, shipped in liquid form, not under pressure, packaged as above, and stocked in major cities. Larvacide has a record of 17 years' outstanding success in Mill and Elevator Pest Control.

INNIS, SPEIDEN & COMPANY
Established 1816
117 Liberty St. NEW YORK
CHICAGO • CLEVELAND • CINCINNATI • BOSTON • PHILADELPHIA • OMAHA

KEEP 'EM TURNING!

DON'T

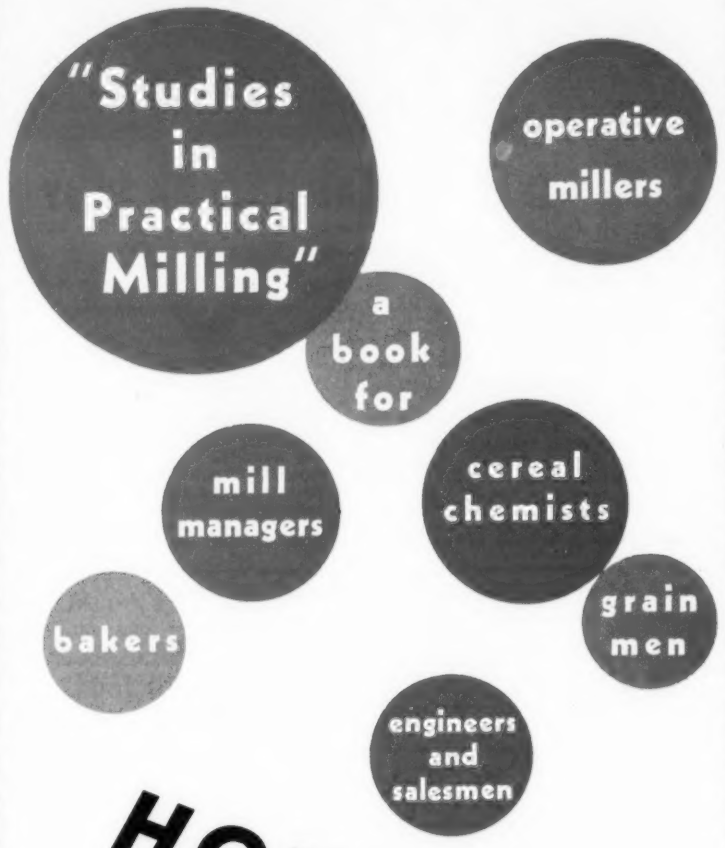
THROW AWAY SILK!

IT IS GOING TO BE INCREASINGLY HARD TO PROCURE NEW BOLTING CLOTH: SAVE THE CLOTH YOU HAVE!

Much of the silk ordinarily discarded by mills can be "rejuvenated" inexpensively, its threads strengthened and protected, and its useful life greatly extended. Write for full particulars. Send us a piece of used silk at our expense.

★ ★

"SCREN-KLEN," Inc.
1305 Glenwood Avenue Minneapolis, Minn.



HOW CAN ONE BOOK SERVE SIX DIFFERENT "TYPES" OF READERS?...

All the men named above have many technical problems in common. These problems are treated *practically* within the 618 pages of "Studies in Practical Milling." . . . Write for the folder that explains what will interest *you* most in this book. Or use this coupon to order your copy NOW. Price: $6.00 postpaid.

MILLER PUBLISHING CO., 118 South Sixth St., Minneapolis, Minn.
I INCLOSE $6.00 for the book, "Studies in Practical Milling."

Name .....

Street ..... City and State .....

JONES-HETTELSATER CONSTRUCTION CO.
Designers and Builders for Milling Companies
600 Mutual Building KANSAS CITY, MISSOURI

The ROTOMASTER
for Rebolting Flour
GENERAL MILL EQUIPMENT CO.
2021-23 Pennsylvania Ave. KANSAS CITY, MO.

MILLERS
Are you using the right *grade, grain* and *amount* of salt? Is it 100% satisfactory? Let us help with *your* salt problem. No obligation—just write, Technical Service Dept. M-6.
DIAMOND CRYSTAL SALT CO., INC.
St. Clair, Mich.

THE WEEVIL-CIDE COMPANY
1110 HICKORY ST. KANSAS CITY, MO.

A COMPLETE LINE OF GRAIN CLEANING MACHINERY
SUPERIOR SEPARATOR CO.
MINNEAPOLIS - MINNESOTA

HORNER & WYATT
• ENGINEERS •
Flour Mills • Elevators
470 Board of Trade Bldg., KANSAS CITY, MO.

It will cost you less to weatherproof your mill now than it ever will!
WESTERN WATERPROOFING CO.
St. Louis and Kansas City, Mo.

body knew for sure how much water was wanted or needed, and there wasn't a moisture tester within a hundred miles, I reckon. I could tell you a lot of amusing things about that mill too—especially about the head miller. I think he was the first bird I'd ever heard called a 'milling superintendent,' and I can tell you that he superintended at some distance from actual operations. The other second miller was two or three years older than I was, and he had had a lot of experience, too. He was the guy who got things done around that place, and when he quit in the spring of 1914, to take a head miller's job in a 500-bbl mill, I knew I was going to be leaving just as soon as I could.

"Well, I see that I'm rambling again. I'll certainly have to get down to business. I'll just tell you about what happened to the 150-bbl mill I was going to run, and then we'll get down to brass tacks.

"The 150-bbl mill I mentioned belonged to a company which had a 600 or 700-bbl plant in a pretty good-sized city, but the little plant was located in a village about 25 miles away. I of course went to the city and to the office of the milling concern, after quitting my other job. The manager was a mighty agreeable fellow. He certainly pushed my respect for my ability up several notches. He told me that he'd been corresponding with some of my 'former employers'—I never did find out which ones—and felt sure that I was just the man he wanted.

"It was just before noon when I left the office with the understanding that I should be on hand the next morning at 9, when he'd take his 'White Steamer' and drive out to the little mill. I was to stay there and figure out what needed to be done. When I got off the street car down town the newsboys were yelling an 'extra.' I got one. Austria had declared war on Serbia—and hell was about to break loose.

"The next morning the manager told me that the price of wheat was just about double what it was the day before. He said that the whole thing would be over in three weeks, but that, in the meantime, I should take a night trick in the big mill (which was just getting started up, after remodelling). I did. And I could tell you some interesting things about that, too, if they really had any bearing on the case. There wasn't anything unusual about that mill, except that it was the first mill I had ever run that was driven by an electric motor—two electric motors, I should say. One drove the rolls and the packers and everything up to the second floor; the other one was belted to the upstairs lineshafts, and drove the sifters, purifiers, elevators, etc. At least once every night while I was on that job the power went off and both motors stopped. It was a lot of fun getting the loaded elevators and sifters and rolls started again, you can bet.

"I didn't stay on that job very long, for one day my wife sent me a letter that had come from Jack Brown, the second miller I worked with under my first 'superintendent' and just mentioned a little while back. He offered me a job as second in his mill, and I didn't waste any time getting there.

"Now none of this is of any importance whatsoever in connection with milling conditions in the United States when we began to get mixed up in what they now call 'World War No. One,' I'm afraid, but it seems like I can't get quite lined up. I got along fine with Jack Brown, but as far as I knew the war hadn't any effect on the mill's business or on the way the mill was operated. I left there along in the early part of 1916 to take a better job, but still as a second miller. As I look back now, I can tell you that there was a good deal of difference in the way we milled then and the way we were milling only five years before, but if I'd try to tell you all about this difference you'd be sitting right there at bedtime and wouldn't have got anything at all that would be worth publishing. Maybe you'd better sort of catch me up by asking some questions."

I told Mr. Garrulity that it seemed to me that we were doing all right, but I did have a question or two I'd like to ask. "For one thing," I said, "what about ash tests? Were you paying any attention to 'the tin god' in those days?"

"Well, some. The fact is that some mills were having ash tests made along in 1910, to my knowledge. But I'd say that not a whole lot of importance was attached to ash, at least not by most millers."

"About how did the ash then compare with today's analyses?"

"Not so far different, grade for grade, and wheat for wheat. I recall seeing a report on the 95% grade we were making in the mill I worked in in 1911. It showed 49 points. I'd think that was pretty darn' high if it was on the 95 we made yesterday or last night—which makes me believe that we *have* made quite considerable progress in 30 years."

"What about protein? And diastase? And fermentation tolerance?"

He shook his head. "You're getting quite a little ahead of the times now," he told me. "I haven't much of a head for dates, and I couldn't tell you, if I'd try, when they first began to test wheat and flour for protein. You must remember that just because a certain thing is discovered or invented at a certain time is no sign that it gets into use all over the world, or even over any section of the country. I could tell you a lot about tests millers used to make to judge the 'strength' of wheat and flour, but if you'd put it all down and print it there wouldn't be any room in your magazine for anything else for maybe a couple of years."

A youngish man dressed in a white suit had just come in the office. He stood a minute or two, waiting for a pause, and then told Mr. Garrulity that the bread was ready for judging. Mr. Garrulity introduced us and told him we'd be "right out."

"It looks as if we're making pretty slow progress in getting to that World War Number One," he said to me. "I was just thinking about how we got started on testing wheat and flour for protein, and how 'diastatic activity' came into the picture. I'll have to get some other things lined out first, though. I wouldn't be surprised if you've got about as much material as your readers can digest at one meal, if they take to it at all, and if it should turn out that they can stand more of it, all you have to do is to give me a ring and come over again. . . . Suppose we go upstairs to the laboratory and take a look at the loaves they have baked today. I have an idea that Crockett will be willing for you to carry a couple of them home with you, if you'd have any use for them."

(To be continued.)

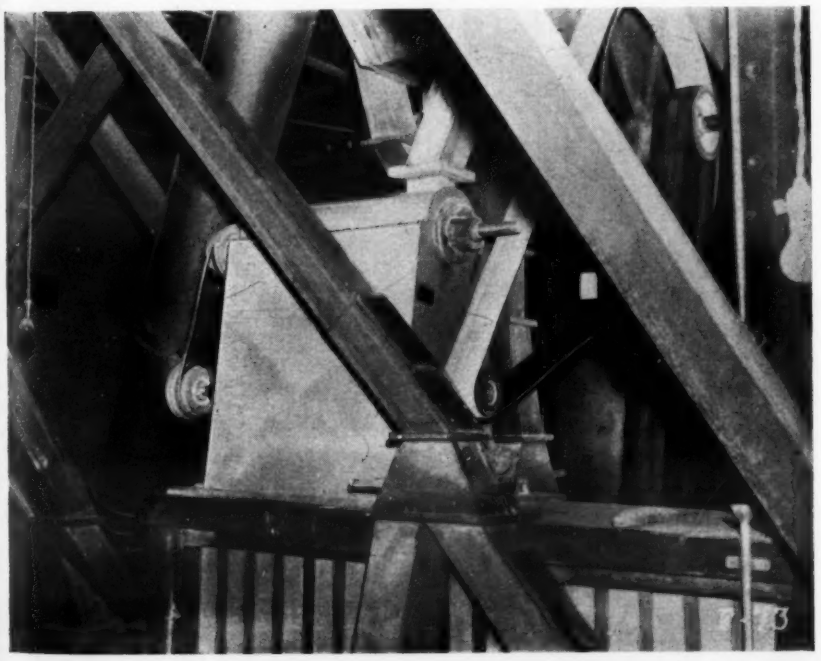
Production Must Be Efficient!

V

KEEP 'EM TURNING!

MILLING IS AN ESSENTIAL INDUSTRY, AND IS SO CONSIDERED BY THE FEDERAL GOVERNMENT. WHATEVER IS NECESSARY TO EFFICIENT PRODUCTION CAN BE PURCHASED.

Far and wide, FORSTER MACHINES are helping millers produce good flour and good millfeed more economically. If they are not working for *you* you are missing an opportunity to help America produce an abundance of food, and at the same time you are depriving yourself of profits.



Belt-driven FORSTER BRAN DUSTER
No brushes - No cloths - No rubbing

The "FORSTER LINE" includes special machines for many purposes. Each is designed to perform a certain operation better than it was ever performed before. There is a variety of "FORSTER FINISHERS"—machines for "finishing" particular jobs satisfactorily. Each and every one contributes to economical production—and to profitable operation.

Pictured at the left is a FORSTER BRAN DUSTER installed in a comparatively small mill. Note that it requires no floor space. If a belt drive had not been available, a small motor could have been satisfactorily used. Specifically, this machine does a fine job of recovering a longer percentage of good flour—making a "better yield." It requires much less power than a brush duster, and no replacements. The quality of the work done is greatly superior.

★

Write for Details

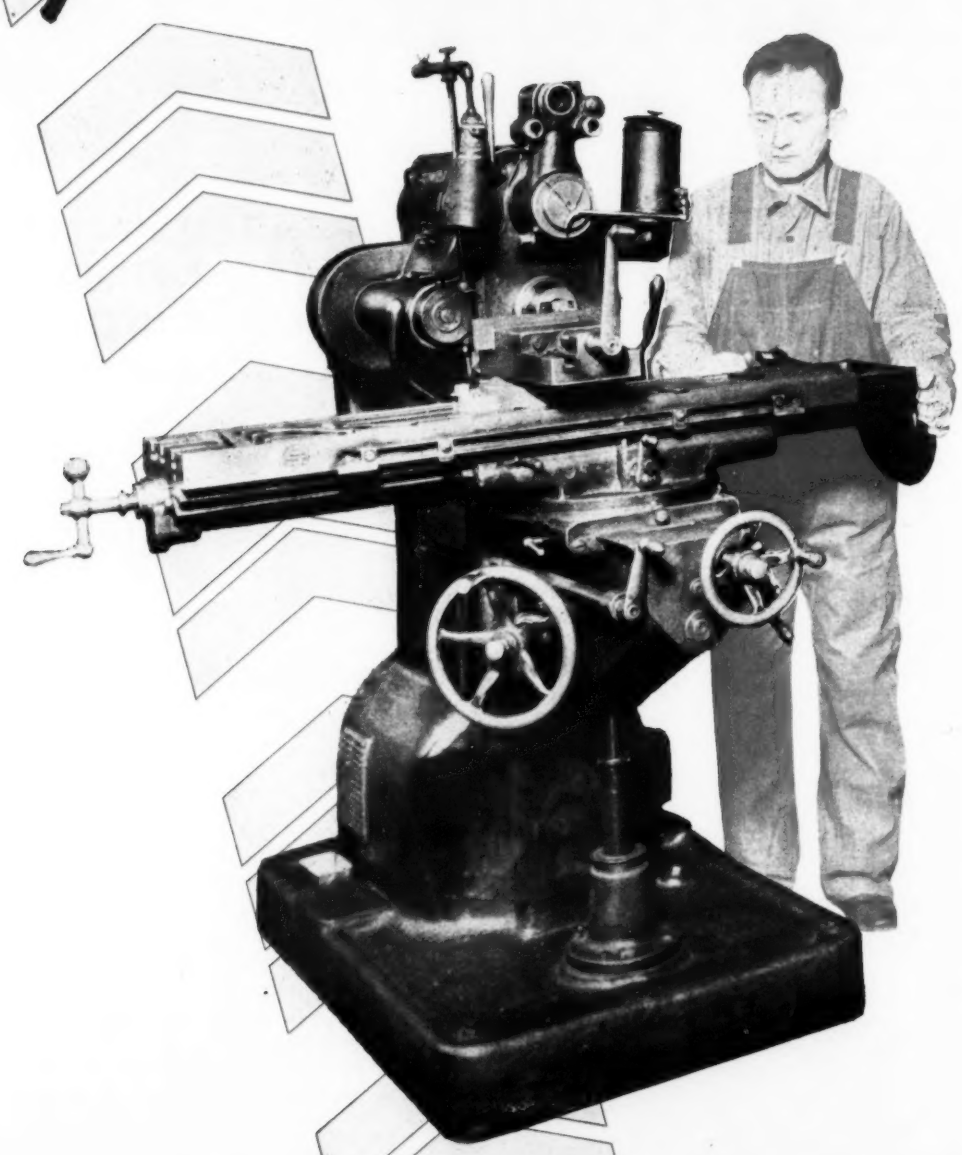
The FORSTER MANUFACTURING CO., Inc.

WICHITA, KANSAS, U. S. A.

REPRESENTATIVES: Central States, St. Louis Mill Equipment Co., 1025 N. 6th St., St. Louis, Mo. • • Southeastern, J. D. Ferguson, 1048 Lewis Ave., Bowling Green, Ky. Northwest, R. J. S. Carter, 1219 Flour Exchange, Minneapolis, Minn. • Canada, Strong-Scott Mfg. Co., Ltd., Winnipeg, Man., and Toronto, Ont. • California, C. M. Fraenkel, 461 Market St., San Francisco. • • Great Britain, Holland, France, Sweden, the Argentine and Australia, Henry Simon, Ltd., Cheadle Heath, Stockport, England.

GRAIN SCOURERS ★ WHEAT CONDITIONERS and WASHERS ★ DUSTERS ★ FINISHERS ★ SEPARATORS ★ HAMMER MILLS ★ FEED MILL MACHINERY

Earning Our Stripes on Two Fronts!



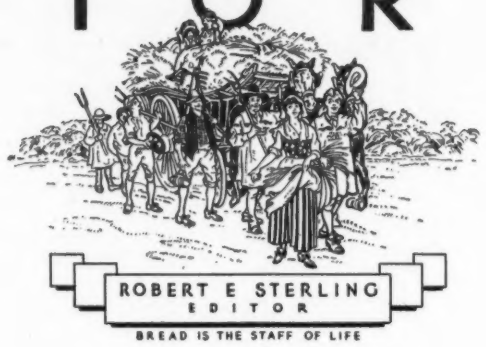
THE WAR FRONT—THE HOME FRONT—WE'RE DOING OUR BEST TO SERVE BOTH!

THROUGH production of war materials, Hart-Carter is serving on the fighting front. Through production of needed equipment for the vital grain industry, Hart-Carter is continuing to serve on the home front. This big, double job calls for increased output from machine shop and foundry—intensified effort on the part of Hart-Carter craftsmen and engineers. Although Hart-Carter, as others, must wait its turn for essential raw materials, we are doing our best to see that all demands are met as quickly and as efficiently as possible. And although war production is the number one job, we are continuing to meet the requirements of the milling industry with new and improved equipment for the cleaning and processing of grain that will help to reduce operating costs and to raise quality levels. Hart-Carter engineers are at work today, as they have been from the start, with their constant and never ending assignment of creating better machines to solve tomorrow's problems.

HART-CARTER COMPANY

680 Nineteenth Avenue N. E. Minneapolis, Minnesota

EDITORIAL



A GREAT OPPORTUNITY

DIRECTED to some extent by the confident forecasts of Mr. Cullen Thomas, of General Mills, Inc., and emphasized by Millers National Federation bulletins to its members, we find a steadily rising hope of greatly increased consumption of bread and other flour products as the result of wartime conditions, especially of the restrictions upon consumption of sugar.

It seems rather a pity that this situation should be so largely limited to hopeful observation of trends with so little being done to speed up those trends and make them practically effective. It is unlikely that many people know that bread and sugar, as the two great energy foods, are so closely related in the dietary that one is in many respects a perfect alternative for the other. It follows that an equally limited number of people know that to the extent, one third or some other amount, sugar consumption is cut down, its place can be almost fully supplied by bread foods.

Unfortunately neither the baking nor milling industries are sufficiently prosperous to be able to supply the great sums required for a national promotion campaign, such as those conducted through the years in behalf of meats, citrus fruits and other competing foods. Yet both organizations have effective, if modest, organizations for promotional activities; and it should be possible so to expand these as to make them effective in directing individual advertising efforts of the whole membership of the bread industries into the channel of emphasizing the energy value of bread foods as an almost complete alternative for sugar.

Such a joint effort would be made all the easier by reason of the public's recreated interest in bread as a result of the enrichment campaign. The "theme song" would be quite simple: There is plenty of bread —bread is the energy food equal of sugar—bread also supplies essential vitamins and minerals.

——BREAD IS THE STAFF OF LIFE——

WHEAT GROWING IN THE SOUTH

AN intelligent observer returning from a considerable journey in the Carolinas and Georgia gives us some "homey" information about wheat growing and flour milling in that section and suggests our sending some one over there to make a survey, the result of which, he promises, would be of much interest to millers and the flour trade.

He referred, of course, to the increased acreage of wheat—a permissible substitute crop—on lands withdrawn from cotton production and the possibility of considerable sections of the Southeast and Deep South becoming in time much more nearly self-sufficient in the matter of flour and bread. There is, naturally, nothing like this yet in sight; yet the increase in wheat growing in the past several years has certain, if probably limited, significance.

In point, the reduction in cotton acreage brought about by "planned agriculture," amounting even in the past five years to approximately twenty per cent in the three states mentioned (down from four and two thirds million acres to approximately three and three quarters million acres) has been accompanied by an increase in wheat production of nearly three hundred per cent in a ten year period. In figures, the three states' wheat production has grown from 3,522,000 bushels in 1930 to 12,452,000 bushels in 1941.

It is believed that this expansion will not continue much, if any, into the current year because of the restriction on fertilizer. Fertilizing, our informant tells us, is almost wholly essential even for the production of wheat yields of from fifteen to twenty bushels per acre on the more worn cotton lands; and with nitrate of soda supplies heavily cut, the poorest of these converted acreages probably cannot be persuaded to produce wheat, in a commercial sense, at all in Georgia and South Carolina, where "synthetic" acreage increase has been greatest. North Carolina has, of course, always been something of a successful wheat growing state. In Georgia, it is worth noting, the increased wheat and other food production has been strongly favored by Governor Talmage's "self-containment" campaign.

There is, quite obviously, everything to be said on the side of the South's efforts to move out of its one-crop agricultural routine and over into food production so far as its lands, climate and labor conditions permit. Seen from northern and inexpert eyes, the way toward this would appear to be in increased feed production, carried on into more poultry raising and dairying, and greater cultivation of vegetable crops. All of these things are now under way. Even in animal husbandry there has been marked growth, as evidenced by the number of meat packing plants built in the South in recent years.

Wheat, however, appears to be least of all adapted to share greatly in taking up the slack of abandoned cotton acreages. To grow wheat on worn lands requiring constant fertilizing, much of the wheat being of indifferent quality, in competition with the lush wheat-adapted highlands of the western plains, simply does not make sense in any language save that of agricultural "programmers" who get their ideas out of the "make America over" philosophy, along with three thousand dollar prefabricated homes for patch farmers and share-croppers. Wheat does not lend itself to fertilized farming and hoe cultivation so long as somewhere else men are growing it on thousand-acre fields with power tillage, seeding, harvesting and threshing involving a labor outlay of less than ten man minutes per bushel.

——BREAD IS THE STAFF OF LIFE——

CHALLENGE TO THE FEED INDUSTRY

THE NORTHWESTERN MILLER'S robust junior publication, FEEDSTUFFS, this week broadsides the announcement that in four of its issues in the month of May it not only will go all-out with everything it has in support of the government's program for increased production of dairy and poultry products and meats, but will, if possible, beat the government to the draw in lining up the nation's great feed industry and all of the feed trades in this job so vital to the whole war effort.

For too many years policies of government, not only in new deal times but extending backward into Mr. Hoover's farm board days, have been founded on an economic and social philosophy of "farm relief" which demanded restrictions on production. Controlling surpluses, rationing seedtime, killing the little pigs, all of the absurdities of seeking prosperity through scarcity have contributed to our now finding ourselves faced with grim war with not enough of many essential foods in the locker.

So now we come to whole-hearted, all-out reversal of policy, to putting America's vast resources of farms and fields and feed yards back to work—not to fiddling around producing just enough, with fol de rols of Joseph granaries, but to producing and producing and producing as much as possible of all things. And, best of all, the whole government team, headed, for this particular game, by Secretary of Agriculture Wickard himself, is in there pitching.

Obviously, nothing in this production program is so important as feeds, and no industry is in better position to serve the nation with its intelligence, knowledge, experience, energy and equipment than the great industry which has in the past decade brought the feeding of animals out of the morass of "throwing 'em whatever is handy" to the peak of scientific use of properly balanced rations properly employed. What makes this particularly true is that for a considerable time the flocks and herds cannot be increased fast enough to do the job. Early progress will have to be made by better feeding of the present animal population, by doing vastly better than ever before what the experts, scientists, colleges and the great feed trade itself have been trying to do—and have done most successfully—through the years.

Here, then, is a great call to a national service no less important than the buying of bonds, paying taxes, making all sacrifices willingly. And this is a service which only these trades can perform. The job is theirs to do; and any man who does less than his full share is letting the country down. Anyway, our young associate FEEDSTUFFS has enlisted for the duration; happily in perfect confidence that these great feed industries are marching right along with it—marching with a will.

——BREAD IS THE STAFF OF LIFE——

EMPHASIZING A WAR NEED

ON another page of this issue appears the full text of a survey of the railway transportation situation, with particular reference to the freight car shortage, prepared by the traffic department of General Mills, Inc.

We are presenting this in full, not because every shipper gifted with simple common sense is not already aware of the situation but because so many people still are inclined to regard this, as well as other wartime restrictions, as something that will work out some way or other and the time to act is over the next hill or even beyond that. On this account, it is quite clear that every possible emphasis should be given the situation daily, even hourly; and we regard it as a plain duty to contribute our share to this, even though it be no more than reiteration.

We know, as doubtless also does every reader of this, many people who look upon the tire rationing situation as something that will pass, or are quite calmly going ahead with the use of their own tires freely in the vague hope that they will get a break somewhere. This is, of course, quite all right, since the loss when they ultimately discover that there are *no tires* will be exclusively their own.

The freight car situation is a wholly different matter. As things stand today, or certainly will tomorrow, the nation's railroads are the one secure means of transportation of goods, save motor transport for as long as tires are available, and limited inland waterways and coastal services. Furthermore, there are bound to be increasing shortages of both materials and labor for maintenance of both the way and equipment of rail carriers.

Here, then, we have a plant and service called upon, or soon to be called upon, to carry a burden of probably a million and a quarter carloads a week, a very large part of which will be absolutely essential to armament production and transportation,—not alone for the probably far off winning of the war but for the not impossibly nearer protection of this continent and even of this country itself.

In these circumstances, it is perfectly clear that any shipper who in any way willfully abuses the service of a freight car or fails in any way to contribute his part to enabling it to accomplish its maximum utility has—not to be too harsh about it—contributed his bit to the nation's peril.

It is further obvious—if selfish interest is, in these trying times, to be appealed to—that every freight car willfully misused brings that much nearer the day when railway services will be rationed and even the movement of crops and the shipment of a commodity so essential as flour will have to stand in line; or, what would be quite as bad in the case of milling, sectional distribution with compulsory short hauls established.

As we said in the beginning, argument and appeal in this vital matter should not be needed. Yet we ourselves observe people all about us who still feel that all of this will work out some way with a minimum of inconvenience. The situation is much more serious than that—as serious as any of today's great problems short of the production of machines of war and the waging of war along the ten thousand mile line of battle.

DIAMOND JO

Plain or Enriched

An old time favorite among quality bakers. Favored because of its unvarying strength and quality.

Diamond Jo brings repeat trade to the baker who depends on this dependable flour. No other ingredient can do more to affect the quality and salability of bread than the flour which is used. Those who choose carefully like Diamond Jo.

Write Us—We Mill

DIAMOND JO

WABASHA ROLLER MILL COMPANY

Wabasha, Minnesota

Our 60th Anniversary of Quality Milling
1882 - 1942

For Over Fifty Years...

KING'S GOLD
KING'S BEST
GOLD MINE
EXCELSIOR

Minnesota makes the Best Flour in the World.

...Made in Minnesota

H. H. King Flour Mills Company
MINNEAPOLIS, MINNESOTA

"ROCK RIVER" RYE "OLD TIMES" BUCKWHEAT

"BLODGETT'S" RYE

All Grades—From Darkest Dark to the Whitest White
—Specially Milled by the Blodgett Family—Since 1849

FRANK H. BLODGETT, Inc., Janesville, Wisconsin

LIBERTY FLOUR

GEORGE URBAN MILLING CO., Buffalo, N. Y.

"Cremo" Just the cream of hard wheat. Crookston Milling Company CROOKSTON, MINN.

Episode in Milling

(Continued from page 23.)

of soft wheat in the surrounding country. Much of the St. Louis output went to the South, but much of it also went, by water or rail, to the East.

In the mill office of the '70's, typewriters did not click, pretty blondes did not distract, telephones did not ring, and uniformed messenger boys did not deliver telegrams. There was no force of traveling salesmen employed by the mills to solicit business.

The flour shipped by the western mills to eastern markets was mostly consigned, unsold, to flour commission merchants in the larger cities. The shipments often were disposed of at a great sacrifice in price. The commission merchants thrived, frequently making far greater profits than the millers. The competition of the mills of New York state and Pennsylvania made development of eastern sales generally unprofitable for the western companies. Railroad rates on flour from Minneapolis to New York were extremely high.

George Mathews pushed his advantage to the limit. He would leave Buffalo on Sunday evening, call on from six to twelve jobbers in the New England territory in the next two days, and be back in his office on Wednesday morning in order to handle the clerical work, the purchasing of wheat supplies, and the general management of the mill. The following Sunday evening, the routine would be started again. It was the only way in which he could keep in touch with the trade, for he considered that the hiring of another man would be an extravagance, and the telephone and telegraph were not commercial assets in those days.

In the meantime, the first of a series of sensational developments, destined to change the entire complexion of the milling industry, and constituting as dramatic a chapter as ever has been written into business history, was occurring in Minneapolis. Edmund N. LaCroix, experimenting in the Washburn B mill, made practical a middlings purifier, which, by separating the middlings and flour enabled the product of spring wheat mills not only to compete with, but to excel, the flour of any other section. At about the same time, some of the millers of Minnesota, who included such famous names as Cadwallader C. Washburn, George H. Christian, Stephen Gardner, C. A. Pillsbury, John Crosby and others, realized the advantage of "high" over "low" grinding. There is no need to tell of these changes in detail here. They are a part of milling history, and have been reviewed many times. Their bearing on this story is only in the result which followed. The "new process" of making flour, having been developed in the Northwest, gave to the millers of that section a vast advantage. From a product more or less despised, and selling only at a discount, they, alone, were producing a clean, white flour that would make 12½ per cent more bread than the best soft winter wheat flours of the time.

Spring wheat flour made by the new process went to a premium, and profits were enormous for the mills that adopted it. George H. Christian stated that profits of his company (the Washburn B mill) averaged 50c a barrel the first year after the middlings purifier and "high" grinding were adopted; in the second year, $1; the third year, $2, and in the fourth year, anywhere from $4 to $4.50 a barrel.

Needless to say, such tremendous profits were obtainable for less than a decade, because they brought an unprecedented boom in mill building, and the new methods were seized upon by competitors; but, for a number of years, there were few mills in other parts of the country that did not face an extreme crisis in their business life. The tenseness, excitement and worry of the period can be realized partly by contemplating what would happen, if, in the next year or so, a system of milling flour would be discovered in Kansas City, or Buffalo, or Minneapolis, that would revolutionize the industry as completely as it was revolutionized in the period from about 1870 to 1880.

MEETING NEW COMPETITION

The Schoellkopf & Mathews firm, after its disastrous start, made a net profit of $31,000 in its second year. The problem of the new competition was facing it, also, but, through the connections John Smith had in the Northwest, something of the changes to come was seen long before most companies had knowledge of them. Quick to see the advantages of the purifier and the new milling methods, Schoellkopf & Mathews not only were the first to adopt them outside of the Northwest, but actually were using them before many of the spring wheat mills had made the change.

The location of Buffalo, with supplies of hard spring wheat readily available from the lake shipments, made the move one of great wisdom. In the third year of the partnership, a new mill of 250 barrels capacity was built in Buffalo, and the profits of the company jumped to $91,000. For the three years of its existence, the firm was ahead $97,000.

The millers of Minneapolis, riding high on the wave of progress and enthusiasm following the success of their new methods, were responsible for another drastic change that completed the upheaval in milling. Casting about for improvements, representatives were sent to Hungary and Austria,—great milling countries where a hard, flinty wheat, much like the grain grown in Minnesota and the Dakotas, was used by mills. These European millers had experimented with, and partially perfected, a substitution of rolls for mill stones. The millers of the Northwest soon adopted this system, improving it, and augmented their advantage over the other milling sections of America. It was estimated that the rolls did 30 per cent more work and used 47 per cent less power than the mill stones. Besides this, they illustrated that the recently discovered "new process" was but a hesitating step in the right direction. The gradual reduction process was not achieved in its full efficiency until the grist mill had become the roller mill.

Again, there is no need to reiterate the details of the development of roller milling. It is obvious, however, that to many millers this latest change was a disheartening event. Most of them had hardly had time to "modernize" their plants to conform to the changes of a few years previous. To them, the situation was comparable to a man chasing his hat on a windy day, almost catching up with it, only to have a fresh gust send

Use Henkel's EXTRA FANCY Bread Flours

Laboratory-Controlled for GUARANTEED UNIFORMITY

"Made Good" Since 1855

COMMERCIAL MILLING CO.
Detroit, Mich.

The Rodney Milling Co.
5,000 Bbls Capacity
KANSAS CITY, MISSOURI

"Heart of America" FLOUR

CHICAGO OFFICE:
Kelly Flour Co., 844 Rush St.
BOSTON OFFICE:
Seaboard Allied Milling Corporation,
1200 Statler Bldg.

"DURAMBER" SEMOLINA
FANCY No. 1
Milled from Carefully Selected
AMBER DURUM WHEAT

AMBER MILLING CO.
Chamber of Commerce - MINNEAPOLIS
Cable Address: "AMBERMILCO"

ROYAL FLUFF-EAT-A

It pays to pick the right cake flour! Average flours really cost more than top quality flours like ROYAL FLUFF-EAT-A, which produces more finished cake per pound of flour. You get a richer, moister, longer-keeping cake with ROYAL FLUFF-EAT-A.

VOIGT MILLING CO.
Grand Rapids, Mich. Telephone 85991

ALL TYPES OF FLOURS
To Meet Modern Baking Needs
●
FEDERAL MILL, Inc.
Lockport, N. Y.

Pfeffer Milling Company
Manufacturers of Pure High-Grade Winter Wheat Flour
Brands: Lebanon Bell, Flake White, Fluffy Ruffles
LEBANON, ILL.
Member Millers' National Federation
Capacity: 1,000 bbls

it bowling along the pavement out of reach.

This newest mode in grinding grain met with much opposition, both from millers and the flour trade. Various charges were made, mainly that it was a fad, and that the flour produced was not as healthful as the buhr-ground flour. Its superiority was apparent, nevertheless, and the objecting mills were strewn along the highway of progress. Schoellkopf & Mathews were not among the casualties, for again they were leaders in adopting the better methods.

With the milling processes so improved, and the capacity of mills increased, the brains of the millers were turned, virtually for the first time, on the merchandising of flour. A story is told of George G. Barnum, the first traveling salesman employed by the Washburn mills, which was in 1878. On a trip in the East, he sent in a great lot of orders which came to the attention of John Crosby. "Earle," the latter called to his clerk, "send for Barnum to come home. He's selling more flour than I can make!"

After roller milling had become fairly well perfected, the leading mills had no fear of one salesman selling too much of their flour, but they found that they could, by diligent and intelligent selling, with a force of trained men, expand their business to a volume not anticipated a few years previously.

Another expansion in the Schoellkopf & Mathews mill occurred with the change which brought such enlarged opportunity to millers who had kept abreast of every competitor, and ahead of most of them.

HARNESSING THE NIAGARA

Since 1757, men had tried to harness the tremendous power of Niagara Falls, but, in 1877, it had not yet been conquered. Millions of dollars had been spent, and many men and companies had gone bankrupt in trying to turn the fall of water to some commercial use.

Almost 20 years after the last attempt had ended in bankruptcy and failure, a partially completed canal at the falls was advertised at auction. A small, curious crowd gathered at the sale. There was only one bidder, which was exactly one more than any one had expected, and the property was promptly sold to him at his own price. And so Jacob F. Schoellkopf, an immigrant boy with less than $1,000 in 1841, became the owner of the greatest water rights in the world, and of a project that had been defeating millionaires for more than a century.

Returning to his office at the Schoellkopf & Mathews mill, he told his partner of the purchase. Mr. Mathews was amazed, and even more so when Mr. Schoellkopf announced that they should have a larger, and completely modern mill, and that it should be located on the canal he had just bought.

Mr. Mathews explained with all his eloquence and energy just why a mill situated at Niagara Falls would not be profitable. In the first place, he argued, the power was only potential, and many smart men had failed in attempts to utilize it; secondly, there were no milling-in-transit privileges on wheat at Niagara, and freight charges on grain to the falls, and on flour back to Buffalo, would offset any advantages in power costs, even if the water power there could be harnessed.

But the German was obdurate; he believed that anyting could be done, and

(Continued on page 30.)

SUNNY KANSAS

Every baker who bakes it will tell you what a fine baking job it does for him

And we will show you how economical it is.

★ ★

The Wichita Flour Mills Co.
2,500 Barrels Capacity 1,000,000 Bushels Storage
WICHITA - - KANSAS
WE SUPPORT WHEAT FLOUR INSTITUTE

HIGH UTILITY PATENT
Country-Milled from Country-run Wheat located in the very center of the High Protein Turkey Wheat Country.
INDEPENDENT OWNER MANAGED
The WALL-ROGALSKY MILLING CO.
McPHERSON, KANSAS

J. F. IMBS MILLING CO. ST. LOUIS, MO.
Millers of Hard and Soft Wheat Flour
DAILY CAPACITY 2,100 BARRELS

European

CONDUCTED BY C. F. G. RAIKES
Manager European Branch
52 Mark Lane London, E. C. 3, England
Telegraph and Cable Address,
"Northwestern Miller, Mark Lane, London"

Parliament Gets Official Denial of Harmful Effect of Vitamin B_1

LONDON, ENG.—During question time in Parliament Major Lloyd George, the parliamentary secretary to the Ministry of Food, was again bombarded recently with questions by Sir Ernest Graham-Little, the member for London University, regarding national wheatmeal and fortified white bread. The information desired about the national wheatmeal was in reference to its constitution and whether breach of the instructions contained in the Statutory Order of August, 1941, was a penal offense. The questioner was referred to former replies in respect to his various questions, supplemented by the information that no prosecutions had been instituted.

The questions as regards fortified white bread were twofold. The first was whether calcium was at present being added to the government reinforced loaf, and, if so, in what form and dosage.

Major Lloyd George replied that calcium was not at present being added to any white flour but the Minister of Food was expecting to make an early statement in respect to this matter.

The next question was whether, in view of the fact that the adidtion of synthetic vitamin B_1 to bread and other commonly used foods, without control over the intake level, carried a potentiality of harm; and, in view of the impossibility of exercising this control, whether he would reconsider his decision to add this chemical product to the white flour supplied under the direction of his department. Major Lloyd George replied:

"The amount of synthetic vitamin B_1 that is being added to white flour raises its B_1 content to about that of national wheatmeal. The addition of the vitamin is carefully controlled and constantly checked so that any variations in the level of intake of vitamin B_1, due to different levels of bread consumption, applies equally to both types of bread. I am advised, however, that there is no possibility whatever of any harmful effects from the vitamin B_1 at any level of bread consumption in either fortified white bread or national wheatmeal bread, and I should be glad if my honorable friend would give me the grounds on which he makes a statement in the contrary sense."

Upon another recent occasion Sir Ernest asked what chemicals were added to Canadian and other imported flour before export, and what were the proportions of each such added ingredient; also, whether the flour was chemically bleached either before or after arrival. Major Lloyd George replied:

"The only substance added to Canadian flour before export, under instructions from the Ministry of Food, is aneurin (synthetic vitamin B_1), which is added to bring the B_1 content to a similar figure to that of fortified flour produced in this country. It is understood the position in regard to chemical improvers and bleachers in Canadian and other imported flours is similar to that of flour milled in the United Kingdom, but no information is available as to the proportion of an added ingredient in individual consignments. Imported flour is not chemically bleached after arrival in this country."

This inquiry and answer led to a Scottish member asking Major Lloyd George the cause for the delay in fortifying white bread with synthetic vitamin B_1 in this country, and when all the supplies of white flour would be so fortified. In reply Major Lloyd George said:

"The scheme for fortifying white bread with synthetic vitamin B_1 is being extended as rapidly as possible having regard to the supplies of aneurin, both home-produced and imported. There have been recent improvements in the rate of home-production but it is not at present possible to say when all white flour will be fortified."

——BREAD IS THE STAFF OF LIFE——

ANDREW LAW'S DEATH FOLLOWED YEAR'S ILLNESS

LONDON, ENG.—For a year preceding his recent death, reported by cable in THE NORTHWESTERN MILLER of Feb. 4, Andrew Law, the veteran Glasgow flour importer, had been in very poor health from a heart ailment. He had been living in the country at Bridge of Allan, Stirlingshire, for some time, having removed there just before one of the big air raids on Glasgow, which caused serious damage to his home from blast.

Up to the beginning of his illness Mr. Law attended regularly to his business, while letters and articles on trade matters written by him appeared regularly in the daily and trade press. He was a staunch free-trader and never lost an opportunity of preaching this doctrine. Also, he was second to none in his knowledge of the flour import trade and all that pertained to flour and wheat. When he thought any matter needed correction he promptly took up the cudgels by means of his pen and whipped out at the offense or the offenders in his straightforward, forceful manner, at the same time always being very fair toward his opponents.

There are few men in the British flour importing trade who have been so well known to American millers and indeed to millers in Canada and Australia. In his younger days he frequently made trips to the United States and was present at the first meeting of the Millers National Federation at Milwaukee. He was very fond of travel and often set off on a holiday trip to the continent, the Mediterranean, Madeira or the West Indies with his wife or one or the other of his children.

Mr. Law started his business career with the old and now long extinct flour importing firm of Max Kosmack & Co., Glasgow. In 1889 he founded the firm of Crawford & Law, his first partner being J. Crawford, who died very shortly afterwards. Then Mr. McNaughton was a partner for a number of years, but for the greater part of the firm's existence Mr. Law carried on the business in partnership with his eldest son, William Ramsay Law, and continued a partner until his death—a matter of 52 years. His younger son, Herbert R. Law, is a partner in the firm of Fennell, Spence & Co., Liverpool. The firm of Crawford & Law has always represented the Pillsbury Flour Mills Co., in Scotland.

Andrew Law was president of the Glasgow Flour Trade Association on two occasions, namely, for the year 1904-05 and 1918-19. He also served at one time as president of the National Flour Trade Association, and was a trustee of the Glasgow Corn Trade Benevolent Association, as well as a member of the Merchants' House and of the Trades House of Glasgow. In addition he took keen interest in municipal matters and became a burgess (member of the corporation) of the City of Glasgow. At one time he was a director of the Greenock Harbor Trust and also chairman of the Glasgow Liberal Club. He was a staunch teetotaler and championed the cause to his very utmost. Until the time of his death he was a director of the Scottish Temperance and General Assurance Co., Ltd., and also of the Glasgow Abstainers' Union. By his death these associations and the import flour trade have lost a very true friend and there are many people who feel his death as a personal loss.

In the old days Mr. Law's visits to the London office of THE NORTHWESTERN MILLER were fairly frequent and very welcome, but it is some time since he was able to make a journey to London. His memory will ever remain fragrant with all who knew him and he will always be regarded as one of the outstanding members of the flour import trade of the United Kingdom. All his many friends salute him.

The business of Crawford & Law will be continued as heretofore. L.F.B.

IN ENGLAND

The smiling RAF pilot pictured is not Canadian or British, but American, and of Missouri stock. His father is Stanley Russell who runs the Grandview (Mo.) Feed Store and formerly was with Dreyer Commission Co. in Kansas City. The boy, Richard, took most of his training in Canada, but is now in England getting final instruction in the most modern planes. Richard is especially adept at instrument flying.

——BREAD IS THE STAFF OF LIFE——

ONTARIO FARMERS FAIL TO GIVE UP SOFT WHEAT

TORONTO, ONT.—There is a good deal of surprise and wonder in the Ontario milling industry over the failure of provincial and dominion departments of agriculture to explain to the farmers of this province how they could make an easy 25c bu by trading their soft winter wheat for western hard springs.

Shortage of winters at milling points has forced the price to a premium which the farmer might put in his own pocket by handing over his soft wheat to mill trucks which will bring the equivalent in springs to his barn door.

Nevertheless, Ontario farmers have been and still are unwilling to part with their winter wheat. They appear to fear some trick in this price premium. A public statement of the facts in the press and by radio would interest Ontario farmers who have wheat they could trade and allay all current suspicions, observers believe. Such an exchange of wheats means an all-round profit to farmers, feeders, millers and consumers.

——BREAD IS THE STAFF OF LIFE——

RUMOR ABOUT FLOUR AND BREAD RATIONING DENIED

LONDON, ENG.—Persistent rumors that flour and bread soon would be rationed brought a recent denial from the Ministry of Food. Hitherto the government had ignored such rumors, though the Minister of Food has made it clear from time to time that breadstuffs commodities were in ample supply. In denying that rationing is planned a spokesman of the Ministry of Food said:

"The rumor mongers have unnecessarily caused a run on bread and flour in the last few days which is capable of creating an official shortage."

This, incidentally, followed a denial a couple of days earlier of any present intention by the government to ration potatoes.

A member of the London flour trade said that the official denial respecting flour and bread was the first intimation he had had of any such rumor.

Canadian ★ ★

CONDUCTED BY A. H. BAILEY
Manager Canadian Branch
1001 Lumsden Bldg. Toronto 2, Ontario
Cable Address, "Palmking"

CANADIAN WHEAT SURPLUS DECREASES

Export Shipments, Including Flour in Terms of Wheat, Gain Over Year Ago

TORONTO, ONT.—The Dominion Bureau of Statistics monthly review of the wheat situation in Canada for February states that there is improvement in the statistical position. The surplus available for export and carry-over on Feb. 1 was 111,000,000 bus less than a year ago, while the visible supply on Feb. 20 was 10,000,000 less. The surplus amounted to 535,044,867 bus, compared with 645,789,647, and the visible supply was 482,465,000 bus, as against 492,533,000.

Export shipments, including flour in terms of wheat, showed a gain of 35,000,000 bus over last season in the six months August-January, but a little ground was lost in wheat shipments during February. Growers in the prairie provinces have delivered 165,000,000 bus of wheat since Aug. 1, 1941, and on the basis of current estimates of seed and feed requirements this represents all but 42,000,000 bus of the 1941 crop. There is reason to believe, in view of the heavy feeding of wheat to hogs and other livestock, that deliveries during the balance of the season will not reach this figure.

——BREAD IS THE STAFF OF LIFE——

SCARCITY OF WINTER WHEAT LOWERS FLOUR OUTPUT IN ONTARIO

TORONTO, ONT.—The latest information from country milling centers in this province is that winter wheat is still so scarce as to prevent anything like a full output of this kind of flour. Mills are doing what they can to induce marketing by farmers, without effect.

Various reasons for the reluctance of farmers to part with their stocks of this grain are given, but at the present ceiling for winters it is possible for a farmer to make as high as 25c bu by trading winters for springs of which there is a great surplus. This, observers feel, ought to bring out more wheat.

While the total volume of winter wheat flour from Ontario which is usually sold from each crop is not large there is always a demand for it and at present this demand is particularly good. The feed also is in better request than has been the case in a long time. Only the fact that there is a ceiling over prices for these products prevents quotations from rising, although an increase in wheat deliveries would soften the market. Today car lots of wheat are hardly heard of and farm deliveries at mill doors are the sole source of supply.

PRICE CEILING CHANGE FAILS TO MATERIALIZE

TORONTO, ONT.—Reports from official sources recently led Ontario flour millers and grain dealers to believe that the wartime price control authorities were about to issue an order correcting some of the defects in wheat marketing conditions throughout this province which have been caused by the ceilings on wheat and flour. So far the expected adjustment has not been made.

——BREAD IS THE STAFF OF LIFE——

WOODS REPORTS 1941 PROFIT

MONTREAL, QUE.—Woods Mfg. Co., Ltd., reported net profit of $114,883 for the year ended Dec. 31, 1941, compared with $55,599 for 1940. This was equal to $7.51 per share on the 7% preferred, $100 par stock, compared with $3.63 in 1940.

Working capital was reported at $1,530,886 compared with $1,171,930 in the previous year. Earned surplus was carried forward at $574,334, while a bank loan of $508,000 was eliminated during 1941.

——BREAD IS THE STAFF OF LIFE——

MILLERS, GRAIN MEN STUDY CANADIAN CEILING EFFECTS

TORONTO, ONT.—The winter wheat millers and grain trades of Ontario held a meeting in the Board of Trade rooms here March 4 to study the current situation with regard to winter wheat. Regulation of prices under the Canadian ceiling law has set up certain conditions which amount to partial paralysis of this business.

A committee was appointed for the purpose of interviewing the control officials. The chief fault, according to observers, seems to be that the ceiling on flour is considerably out of line with that for wheat.

——BREAD IS THE STAFF OF LIFE——

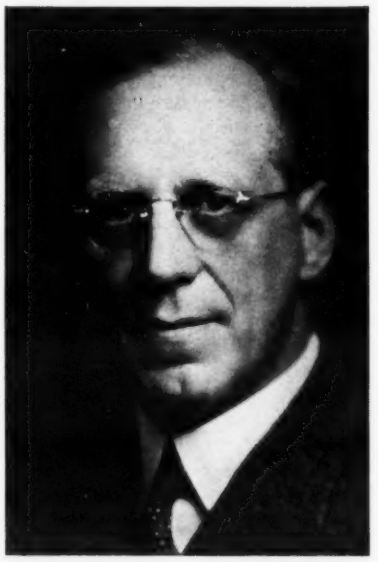
FREIGHT ASSISTANCE PLAN BUILDS FLOCKS AND HERDS

VANCOUVER, B. C.—Poultry and stock breeders of British Columbia have been enabled to build up their flocks and herds considerably during the past three months under the federal government freight assistance plan. This plan, which went into effect last November, provides for a government payment of $6 ton on all feed grain shipped to the coast from the prairies. The saving in feed costs, which are such an important item in livestock feeding, has already been reflected in a sharp gain in breeding and all this aided in Canada's war effort.

There are, however, some farmers who not only have failed to benefit from the new measure but are actually suffering more now. These are the coast farmers who have been growing feed grains for the local market. Now they find their outlet practically shut off as their prices are $6 ton out of line with the imported prairie feeds. What is more, the coast farmers could secure much higher prices for their product if they could ship them across the boundary line, but they are prohibited from doing this during the war.

At the recent annual convention of the British Columbia Federation of Agriculture the plight of the coast feed growers was thoroughly discussed and the delegates approved a resolution asking for the payment to feed growers on the coast of a subsidy equivalent to what was paid by the federal government on the freight on prairie feed grain coming to British Columbia.

• GETS OFFICIAL POST •



The War-time Prices and Trade Board has announced from Ottawa that Lloyd D. Jackson has been appointed special advisor to the bread and baking products administration. Mr. Jackson is president of Jackson's Bread, Ltd., Hamilton, Ontario, and is recognized as a leader in the baking industry. At present he is honorary secretary of the Ontario Bakers Association. He is a graduate of McMaster University and later studied cereal chemistry at Ontario Agricultural College.

ACTIVE DEMAND SEEN FOR CANADA'S FLOUR EXPORTS

TORONTO, ONT.—Canadian flour mills are likely to see an active demand for all the flour they can produce for export during the remainder of this crop year, according to reports. Production may be curtailed by scarcity of ocean shipping but with most of this business in the class of war munitions the governments concerned will probably find enough shipping to take care of their more pressing needs. Both the Atlantic and Pacific oceans will figure largely in this trade, as will also the islands of Newfoundland, British West Indies, Iceland and other war areas.

CANADIAN FLOUR OUTPUT INCREASES OVER JANUARY, 1941

TORONTO, ONT.—Statistically the month of January was a very good one with the Canadian milling industry. The bureau at Ottawa has just released its figures for the month, reporting almost 90,000 bbls of daily capacity was employed.

Flour production was 1,555,850 bbls, as against 1,177,369 bbls a year ago. Exports of flour from Canada for the month were 750,363 bbls, against 354,818 last year. Wheat ground amounted to 7,020,607 bus, against 5,293,370 bus in January, 1941.

In the coarse grain group oats, corn and barley showed an increase, while other grains were down. Ontario winter wheat ground showed a serious decline against last year, the amount being 291,055 bus as compared with 443,836 bus in January, 1941. The amount of winter wheat flour produced in January of this year was 66,309 bbls against 92,167 last year.

In the matter of feedingstuffs January of this year showed 30,619 bbls of low grade flour, 9,884 bbls of feed flour, 21,869 tons of bran, 20,206 of shorts and 12,071 of middlings, all of which figures are better than last year.

The percentage of milling operations in January reached 71.3, against 51.5 a year ago. This figure is slightly under that for December. November reached a total of 79.4, October 69.9, September 74.6 and August, which was the first month of this crop year, 82.3% of the total capacity employed.

——BREAD IS THE STAFF OF LIFE——

TWO INSECTS REPORTED IN GRAIN IN WESTERN CANADA

WINNIPEG, MAN.—Two insects capable of reducing grades by extensive physical damage to stored grain have appeared in the temporary storage annexes in western Canada, according to a statement issued by the Board of Grain Commissioners. These are the spider beetle and the rice weevil.

The rice weevil was recently found infesting grain stored in a temporary annex at Silver Plains, Man. This insect has never before been reported in commercially stored grain in western Canada. The rice weevil is the predominant insect pest of stored grain in the United States, and Dr. R. T. Cotton, the American authority, states that "it is undoubtedly the most destructive insect pest of stored grain."

The spider beetle was found infesting grain in a considerable number of temporary annexes throughout the prairie provinces last autumn. Most of the infestations were light and no serious measures were taken to eliminate the insects. Since spider beetles are remarkably resistant to low temperatures, they are, in all probability, still present in annexes, the board statement says.

Better flour for Baker, Jobber and Grocer....

"HAVASAK"

•

SECURITY FLOUR MILLS CO.
Operating SECURITY and MID-WEST Mills
W. A. CHAIN, Mgr. ABILENE, KANSAS

Two of the Nation's Finest Flours
"AMERICAN EAGLE"
"THE ADMIRAL"
The H. D. LEE FLOUR MILLS CO.
Salina, Kansas

MotherHubbard
FOR QUALITY, FLAVOR AND ECONOMY
Flour Hubbard Milling Co.

THE
Shellabarger Mills
Millers Since 1776
SALINA • KANSAS

HARDESTY MILLING CO.
Quality Millers *for*
Over Half a Century
Domestic and Export DOVER, OHIO

Bowersock Mills & Power Co.
LAWRENCE, KANSAS
ZEPHYR FLOUR
AS FINE A BAKING FLOUR AS A BAKER CAN BUY AT ANY PRICE
Established 1874 1,500 BARRELS DAILY

"Whitewater Flour"
Ground Where the Best Wheat Is Grown
WHITEWATER FLOUR MILLS CO.
Whitewater, Kansas

THE ROSS MILLING CO.
Choice Quality Flour
Plain and Selfrising
OTTAWA KANSAS

Feedstuffs

The feed man's weekly newspaper

$1.00 PER YEAR

118 SOUTH SIXTH ST.
MINNEAPOLIS - MINN.

PUBLISHED BY THE NORTHWESTERN MILLER STAFF

Episode in Milling

(Continued from page 27.)

that his scheme was worth trying. The matter of transit arrangements had not previously entered his head, but it would now have to be corrected, and the canal would have to be put to work.

Further opposition came from local bankers, who refused to loan him any money on what they considered such a foolish enterprise. He replied by raising money elsewhere, selling his notes to brokers in New York City, and selling stock to friends. Virtually every one thought that, in the inelegant parlance of modern slang, Mr. Schoellkopf had "laid an egg," but he surrounded himself with practical men, got a flow of water through the canal, and built there a 1,000-barrel flour mill for Schoellkopf & Mathews. This was in 1878.

THE EFFECT OF CHEAP POWER

The cheap power of Niagara Falls, the enlarged capacity, the progressiveness of the company and the fine flour it produced, combined to bring increasing prosperity to Schoellkopf & Mathews. With the exception of the first year of its existence, it never failed to make a good profit. The lowest return was $12,000, the highest $240,000, in a year.

The importance of Mr. Schoellkopf's purchase of the canal was not, however, the resulting progress of the milling company. It might be said that if Mr. Schoellkopf had not been interested in flour milling and cheap power for its operations, he would not have developed the gigantic project. By 1882, seven flour mills were located on the Schoellkopf canal, two of them belonging to Schoellkopf & Mathews. Gradually, as Mr. Schoellkopf and his associates learned more of harnessing and utilizing the flow of water, electricity and power uses were expanded. Today, as a result of the bold speculation of this flour miller, tanner and financier, there is the Buffalo, Niagara & Eastern Power Co., of tremendous capitalization, furnishing cheap power to all of New York state. The project has brought many millions of dollars to the Schoellkopf estate and to the coffers of those friends who were not afraid to go with him where millionaires feared to tread.

The incident of his purchase of the Niagara canal gives a perfect picture of Jacob F. Schoellkopf. Constantly seeking for new avenues of profit, he seemed erratic, but time has proved him far sighted. He not only insisted that all of his own money always be at work for him, but he also gave employment to the cash of any one else, if it were at all possible. He kept close account of debts owed to him, but refused to list, except in his memory, debts he owed to others. Despite his wealth, he usually was in need of ready money for some one of his enterprises, and he was a heavy borrower in Buffalo, New York City and elsewhere.

Knowing that he never kept a written record of these borrowings, Mr. Mathews asked him one time how he knew when one of his many notes came due for payment.

In his thick German accent, and with some of the explosive ejaculations peculiar to him, he replied that when the notes went to protest, he was always notified, and then paid them. He had found that much cheaper than hiring a bookkeeper!

OTHER FINANCIAL ADVENTURES

After Schoellkopf & Mathews had gained a considerable amount of prosperity, and usually had a fair amount of capital in the bank, Mr. Schoellkopf made the company finance him as he had financed it in its early days. He seldom interfered with the management of the mill, but kept a desk there. Often he would come into the office and call to Mr. Mathews: "Vell, how much money haf we?" Ascertaining this, he would check out as much as could possibly be spared, leaving his note in its place, and invest it in some one of his many other concerns. He had supported the child, and now that the child was grown, he saw no reason why it should not support the father.

Before leaving on one of his periodic trips to Germany, Mr. Schoellkopf asked Mr. Mathews how much credit could be obtained by the mill. He did not explain why he wanted money, but requested that Mathews borrow and save every penny possible and send it to him in the Old Country. The junior partner was familiar enough with the Schoellkopf methods to agree, and for several weeks cash flowed from the mill office to Germany. When the credit of the firm was stretched to the limit,—almost to the breaking point,—Mathews cabled that he could send no more.

Not long afterward, Mr. Schoellkopf arrived at the mill office. With him he had a trunk, which when opened revealed that it was full to the rim with bonds of the United States government. Mr. Schoellkopf had been traveling over Europe, buying this paper at sharp discounts. He took advantage of the fact that United States securities were not well regarded so soon after the Civil War, and of the knowledge that they were soon to be redeemed at par, and he had put every cent he could raise into the purchase of them. The profits comprised a respectable fortune for himself and for those who had helped him carry out the coup.

THE NEW FACTORS

The sensational new machines and processes which marked the milling revolution, the rapidly developing railroads, wheat lands and centers of population, combined to change the entire aspect of the business. There were giants in those days, and a fair proportion of them were in the milling business. These were quick to observe the possibilities of commercial expansion in the new order, and the merchandising of flour, for the first time, became with them as important as the making of it. Others were plentiful who did not realize that a transition, not only in milling processes, but in selling methods, was under way; few of these survived.

With the advent of purifiers, roller milling and the gradual reduction process, Minneapolis millers rapidly started the development of distant markets. Many of the spring wheat millers of that period were men of unusual business ability, and they knew how to use their advantage to the fullest degree.

The large profits and newness of the industry also drew extraordinarily smart men to it in other parts of the country where wheat supplies were abundant. Competition no longer was local. The products of Minnesota and St. Louis mills became as well known in eastern

"OLD SQUIRE"
Always is good flour. Pays no attention to ups and downs and this and that.
Just always GOOD FLOUR
Moore-Lowry Flour Mills Co.
Board of Trade Bldg. Kansas City, Mo.

"Sweet Cream"
"Very Best"
Quality Flours
W. J. JENNISON CO.
MINNEAPOLIS, MINN.

We specialize in designing and engraving for Millers and the Grain Trade
Holland Engraving Co.
Kansas City, Missouri

New Mill Completed 1936
"SLOGAN"
A Modernized Flour for the Baker
CANADIAN MILL & ELEVATOR CO.
El Reno, Okla.

Soft Cake Flour
For Biscuit Manufacturers
WATSON HIGGINS MILLING CO.
GRAND RAPIDS, MICH.

Evans Milling Co.
INDIANAPOLIS, IND., U. S. A
Manufacture Kiln-Dried
WHITE CORN PRODUCTS
Capacity, 16,000 Bushels

The Williams Bros. Co.
Merchant Millers KENT, OHIO, U. S. A.
Specialists Ohio Winter Wheat Flour
All our wheat is grown on "Western Reserve" and bought from the growers at elevators we own and operate.

KING MIDAS FLOUR
KING MIDAS FLOUR MILLS
Minneapolis, U. S. A.

A Real Gem in Flour
KANSAS DIAMOND
Made by
Arkansas City Flour Mills Co.
Arkansas City, Kansas
Daily Capacity 2,000 bbls

PAGE'S FLOURS
THE THOMAS PAGE MILL CO.
Topeka, Kansas

As fine a flour as you will find milled from the finest Turkey wheat in the heart of Kansas in

An Independent Mill

WOLF MILLING CO.
ELLINWOOD, KANSAS

CROWN MILLS
PORTLAND, OREGON

Millers of High Grade Bakers, Family and Export Flours.

"THE FLOUR SUPREME"

THE QUAKER LINE
Flour — Cornmeal
Commercial Feeds
THE QUAKER OATS CO.
St. Joseph, Mo.

PURE RYE FLOUR
We make a high-grade pure winter rye flour
Ask for sample and quotations.
FISHER & FALLGATTER
WAUPACA, WIS.

BLAIR'S Certified FLOUR FEEDS
BLAIR MILLING CO., Atchison, Kans.

I-H
QUALITY MILLED FLOURS
Ismert-Hincke Milling Co.
Kansas City, Mo.

markets as the flour made in western New York. The great battle for advantages in railroad rates broke from desultory firing to heavy and consistent fighting.

Schoellkopf & Mathews had kept abreast of the new methods in making flour, and now found the fight had only started, for the competition from the West was growing steadily stronger.

The Minnesota millers, for several years after they had started their ascent to prominence, concentrated their selling efforts in the cities of New York, Pennsylvania and New England,—exactly the markets that had been developed so assiduously by George Mathews. Thus, Schoellkopf & Mathews, together with the other Buffalo mills, felt the full force of the western competition, and a great deal of ingenuity and alertness was necessary to meet the strategy and business acumen shown by such men as C. A. Pillsbury, George H. Christian, John Crosby and others.

The advantage Buffalo millers had in being able to draw wheat from the West with considerably smaller transportation charges than were obtainable on flour was soon offset to an important degree by the aid this group of Minneapolis men were given by the railroads. The general trend of evidence seems to show that for a long time,—certainly from 1880 to 1900,—the Minneapolis millers were aided in building up their eastern business by the carriers. They were given secret rebates at times, but mainly they were benefited by schedules of rates which, their opponents claimed, were unduly favorable. This situation very often enabled the western companies to sell flour in the East at prices which might be ruinous to an eastern mill if the latter did not, also, have railroad friends who could grant similar favors.

A MILLER'S RAILROAD

Water competition was the excuse for the low rail rates granted to the millers of Minneapolis, although probably as important a factor as anything else was the presence on the directorates of the railroads of most of the leading millers of that city. The Minneapolis, Sault Sainte Marie & Atlantic Railroad Co., which carried much flour eastward when it was first built, had as its president W. D. Washburn, with C. A. Pillsbury vice president and J. K. Sidle, John Martin, C. M. Loring, W. W. Eastman, W. D. Hale and C. J. Martin—all prominent millers—on the board of directors.

These tactics were not employed by the Minneapolis millers alone, however. Obtaining favors from the railroads was as much a part of milling as the interviewing of a prospective flour buyer. One simply had to do it if he were to stay in business as a miller.

The St. Louis millers, for instance, played off their water routes against the railroads, shipping by which ever gave them the lower rates. As between the different railroads the millers of St. Louis combined to ship all their flour to eastern markets by the route that offered the lowest rate. For four years they shipped exclusively by the Ohio & Mississippi and the Baltimore & Ohio. Then they tried the Chicago & Alton and the Wabash for a couple of years. With the expiration of the contracts with these two lines, the different roads running out of St. Louis agreed to charge the millers full tariff on all flour shipments whether they shipped a part or all by any one

(Continued on page 45.)

PRESTON-SHAFFER MILLING CO.
MERCHANT MILLERS
ESTABLISHED 1865
SOFT WHITE WINTER WHEAT FLOUR A SPECIALTY
Also Choice Blue-Stem and Hard Spring Patents
WE INVITE EXPORT CORRESPONDENCE
General Offices: WALLA WALLA, WASHINGTON
Mills at Waitsburg, Washington, Freewater, Oregon, and Athena, Oregon—Daily Capacity, 3,000 Bbls
Atlantic Coast Office, RAYMOND F. KILTHAU, Produce Exchange, New York.

Centennial Flouring Mills Co.
GENERAL OFFICE—814 Second Ave. Bldg. SEATTLE, WASH., U. S. A.
DOMESTIC AND EXPORT MILLERS
SOFT WINTER WHEAT FLOURS
BLUESTEM AND HARD SPRING WHEAT FLOURS
MONTANA SPRING WHEAT FLOURS
HI-RATIO CAKE FLOURS
Mills at Tacoma, Spokane, Reardan, Ritzville, Wenatchee, Wash., U. S. A.
Correspondence Solicited
CABLE ADDRESS: "CENTENNIAL—SEATTLE." All Codes

COMMANDER-LARABEE MILLING CO.
General Offices
Minneapolis, Minnesota — Kansas City, Missouri

WESTERN MILLING CO.
MONTANA SPRING WHEAT PATENT
BLUESTEM—PATENT
FINEST SOFT WINTER WHEAT PATENT
General Offices: Walla Walla, Washington — Mill at Pendleton, Oregon

Fisher's FOR UNIFORM FLOURS
The largest and most modern flour mill and elevators on the Pacific Coast with storage capacity at our mills of 2,500,000 bushels, together with more than one hundred elevators and warehouses in the choicest milling wheat sections of Montana, Idaho and Washington, insure the uniformity of all Fisher's Flours.
FISHER FLOURING MILLS CO., SEATTLE, U.S.A. Domestic and Export Millers
CLIFF H. MORRIS & Co., Eastern Representative, 25 Beaver Street, New York City

WASCO WAREHOUSE MILLING CO.
MILLERS OF
BLUESTEM PATENTS - MONTANA HARD WHEAT PATENTS
PASTRY FLOUR - CAKE FLOUR
Cable Address: "WASCO." All Codes. Daily Capacity 2,000 Barrels
New York Inquiries: Joseph F. Ullrich, Produce Exchange Building
The Dalles, Oregon, U.S.A.

FLOUR and FEED *routed via the* Chicago & Illinois Midland Railway Co. *goes forward to destination promptly*
V. H. WILLIAMS, *Traffic Manager*, 709 Public Service Building, Springfield, Ill.
ERNEST IRBER, *N. W. Agent*, 316 Corn Exchange, Minneapolis, Minn.

FEEDSTUFFS *Published Weekly*
ENQUIRE SPECIAL RATE
TO NORTHWESTERN MILLER Subscribers

Stuffed Straights

FROM THE MANAGING EDITOR'S SIFTER

By Carroll K. Michener

AGAINST DOCTOR'S ORDERS.—Nearly every big community, it seems, has business firms or factories in which patriotic and social-minded managers feed their clock-punchers vitamin tablets. In fact, the stunt is so far developed as to have produced a Vitamins-for-Defense service which is an industry in itself. The promoter is William T. Thompson, an energetic chemist who 12 years ago started manufacturing vitamin-fortified products and who since then has fortified the products of several big California bakers and served as consultant to a number of food, drug and drink companies. He also makes vitamin preparations for plants and animals. To accommodate his rapidly growing business, he moved last summer into Walt Disney's former studio in Hollywood, where he now can produce around 2,500,000 vitamin tablets daily.

Under his Vitamin-for-Defense program, Mr. Thompson supplies his clients with vitamins and minerals for 3c a day per worker. Designed specifically for defense laborers, most of the potencies in the tablets are considerably in excess of the minimum adult daily needs. They contain vitamins A, D, C, B_1, G, B_6, nicotinic acid, pantothenic acid and biotin plus calcium, phosphorus, iron, iodine and food copper.

Along with the tablets, Mr. Thompson sets up an educational program on vitamins to encourage the workers' full participation. The schedule includes pep talks on how vitamins benefit consumers, Vitamins-for-Victory posters, illustrated brochures and letters from the employer to his employees.

"Here's to your Health! . . . and less drudgery in work, more fun out of play," says one such letter. "Vitamins help to keep you fit. Fit to do your bit in taking a mighty poke at the Axis Assassins. Fit to go *all out* for fun at the end of the day's work. Vitamins are the *fighting foods* (and don't let anyone tell you they're drugs) that every man must have to get the most out of life."

In selling his plan, Mr. Thompson maintains that it will step up defense production by cutting down the work days lost because of ill health and underscores his contention with the longer and more intensive work schedules in prospect. Privately he adds that a high vitamin intake (especially of thiamin, of which the tablets have three times the minimum dosage) will lessen Monday hangovers among employees.

v v

But, now comes Council on Foods and Nutrition and the Council on Industrial Health, with an exhaustive study of the subject and the conclusion that "satisfactory evidence of the wisdom of industrial concerns providing all of their employees with vitamins indiscriminately is lacking." The councils state that they cannot give their support to the program of which this is the objective.

"Nothing in this report," so run the findings, "is intended to belittle the significance of vitamins in nutrition, or the value of the proper use of added vitamins in improving staple foods, such as bread and flour. What is being emphasized is the need for the avoidance of indiscriminate mass use of vitamins, a practice which supports the commercial exploitation rather than scientific rational use of these important dietary factors."

There are some things factory and office managers can do, however, says the *Journal of the American Medical Association,* which suggests better lunchroom facilities, improved hygienic environment and a policy of consistent dissemination of accurate educational material about foods and nutrition.

"Some progressive organizations," says the *Journal,* "already are developing or have developed suitable educational material for such purposes. The National Dairy Council and the American Meat Institute, among other organizations, have charts and pamphlets that have been approved by the Council on Foods and Nutrition. Governmental agencies also offer many leaflets. A single thoroughly developed guide is much needed. . . . The report of the councils will be disappointing only to those who have hoped that a panacea might reside in small capsules easily swallowed between meals. Improvement in the nutritional status of a nation can come only by means of sound education under the guidance of medical scientists leading primarily to the promotion of food rather than the taking of pills and capsules."

v v

Let us open the Book at Isaiah, 55: where at we may read: "Wherefore do ye spend money for that which is not bread? and your labour for that which satisfieth not? Hearken diligently unto me, and eat ye that which is good, and let your soul delight itself in fatness."

◙ ◙ ◙

THIS WEEK'S SCORE: WHITES 2, BROWNS 1

The official food guide devised by the Federal Security Agency for use in its new drive to make America "nutrition-conscious" specified "enriched *white* bread," along with whole grain products, as one of the imperative items of food.

John Kennedy, the distinguished author and commentator, conducting the current "Listen America" program for NBC, distinctly and for the first time laid emphasis upon the desirability of eating enriched *white* bread for health's sake.

But a health doctor (Rasmus Alsaker, M. D.), writing for *Beauty & Health,* a Macfadden publication, cautions a patient against ever again eating anything but whole wheat bread, because "white bread does not contain enough of the compounds that help to maintain health." On the other hand, he says, whole wheat bread is preferable because "the wheat germ is especially rich in Vitamin E, which is needed not only for its tonic value, but to continue the human stream, generation after generation." Under the outer coating of the whole wheat kernel, and in the germ, adds the good doctor, who ought to be in "Who's Who" for such profundity, but isn't, as yet, "are plenty of health builders, but these are removed in making white flour."

v v

(Beauty & Health *formerly was the great Bernarr Macfadden's* Physical Culture, *the big muscle dope sheet. Now it's a women's beauty guide. It has a dated diet program that mentions enriched bread but prefers whole wheat products. Editorially it does not let its right hand know what its left hand is doing. Not many pages away from the branny Alsaker is a fine illustrated glorification of the Standard Brands three-reel moving picture, "The Modern Miracle," dedicated to the bakers of America "who are aiding the government's nutrition campaign by marketing the new vitamin-enriched bread").*

◙ ◙ ◙

THINGS WE WOULD LIKE TO KNOW: . . . Why is it the little girl at the counter where we buy an occasional sandwich always smiles when we say: "On enriched bread?" . . . Why is it that although even expert dieticians as yet don't seem to be able to agree more than once in a coon's age on the proper vitamin content of dietaries, the home economists, domestic science teachers, county agents, relief workers and settlement house chefs all seem so confident that they can teach housewives and school girls to balance the meal-to-meal vitamin account at the kitchen table? . . . And why is it that, although it takes nearly a third more wheat to make a barrel of white flour than one of whole wheat flour, we have never heard of such a thing as a farm movement in support of white flour—or for that matter of any kind of flour? . . . Does only echo answer?

◙ ◙ ◙

Seems as if there ought to be some simpler way of rationing sugar, but we can't think of any on the split second. Here is some idea of the size of the job, aside from the teacher angle: Government printing office is thundering away, with the help of 23 commercial shops, at 700,000,000 consumer forms, cards and booklets. Paper requirement, 300 carloads, ink 30,000 lbs.

CONTRIBUTORS' CORNER

Ethel Romig Fuller

Perhaps we should have changed the heading this time to read "Poet's Corner," for now we turn to one of our versifiers. Maybe it has seemed odd to readers of this journal that very few of its issues, over the almost seven decades of its existence, have gone to press without a rhyme tucked away somewhere in its content, ranging in character all the way from the rankest of doggerel to—we say this without shame and yet without blushing—poetry of topmost rank. But we do not think it is odd at all. We are on the sidelines of an industry that is close to the heart and worship of humanity. Bread is the very poetry and hymn of life, and the mill's song and the whisper of wind through waving wheat are among the most profound of all the fixations of human sentiment. So we owe no one an apology for our poetry—nor do our poets and poetasters.

The name of Ethel Romig Fuller is familiar in this corner. She has been a contributor for many years. She has caught the fine flavor and dignity and romance of flour and bread, and shows it forth not only with deft meter and word but with the right leavening of emotion. Turn to page seven of this issue for her current offering. This one is woven from yarn of reality, for hers is the homecoming sailor lad. He is a Marine corporal who, after serving four years and then settling down to a fine job in a furniture company in Seattle, was called back from the reserve for the duration.

Michigan born, Miss Romig married Charles E. Fuller and thus was rescued from the teaching career for which she was prepared. In Portland, Oregon, their two sons were born, both now married: Romig C. Fuller, head of a successful

radio-advertising business, and Thomas D., the corporal of Marines. While these lads were in their teens Mrs. Fuller began versifying. She took night classes in the University of Oregon Extension Division to brush up on the rules of versification and to acquire some of the fundamentals of journalism. Her verse clicked with editors from the first, and an exciting avocation soon became a full-time vocation. She has been poetry editor of the *Oregonian* for nine years, conducting a weekly column of high-quality verse, with contributors from all over the world. Her two books, "White Peaks and Green," and "Kitchen Sonnets," are in second editions, a thing that happens to few volumes of poetry.

It should surprise no one that a poet should be domiciled on a 110-acre wilderness tract of mountainside in the heart of the Cascades. That is precisely where Mrs. Fuller and her husband, now retired, have built their Swiss chalet type of cabin and are clearing land for gardens (another of Mrs. Fuller's hobbies is mountain climbing—and still another is sea shells—she has a museum-size collection from all parts of the globe). At "Sky Home," which she calls "a veritable Eden of peace and beauty," she writes prolifically and carries on her editorial work. She wants it said to our readers that she has relearned the fine art of pastry and bread-making—much to the gratification of her family, if she does say so as maybe she shouldn't! She has travelled extensively, giving readings of her verse, acting as advisory poet at university summer schools and lecturing before clubs.

There is a paragraph down at the end of the biographical memo she has submitted by editorial request in which Mrs. Fuller speaks flatteringly of her long affiliation with The Northwestern Miller and its managing editor—the which, in a sudden and unwonted upsurge of modesty, we omit.

——BREAD IS THE STAFF OF LIFE——

CANADIAN USE OF WHEAT FOR FEED INCREASES

TORONTO, ONT.—The quarterly review on the coarse grain situation released by the Dominion Bureau of Statistics, Ottawa, reports the record of more than three months' operation of the freight assistance plan and indicates the part wheat is likely to play in livestock feeding.

The prairie provinces will feed 44,000,000 bus of wheat during the current crop year, compared with 32,000,000 bus last year. In Ontario, Quebec and the Maritime provinces, the feeding of wheat this season is expected to be the same as the 16,000,000 bus fed last year, but the total use of wheat for livestock and poultry in all Canada is estimated at 60,000,000 bus, compared with 48,000,000 in 1940-41.

It has previously been advocated by the bureau that to feed wheat to animals in place of other grains is profitable. The cost of feeding a bushel of wheat to livestock is lower than either oats or barley. To what extent the livestock grower has taken this advice is not at the moment apparent, but there is evidence in eastern Canada that it is not an easy matter to convince farmers that a change from their accustomed methods and types of feed should be tried. This has been discovered by millers in Ontario, who, desiring to have Ontario winter wheat for the kind of flour they want to produce, have been offering to exchange wheat from the prairie provinces bushel for bushel at a 30c bu profit to the farmer, but have failed to get their requirements of the Ontario product.

Despite the foregoing, however, a large volume of western Canadian grain, and considerable wheat, will be utilized on farms in eastern Canada as a supplement to available feed supplies. From the beginning of the crop year on Aug. 1 up to the end of January, shipments of oats from the head of the lakes to eastern Canada totaled 7,700,000 bus, compared with 2,757,000 bus in the corresponding period of previous year; shipments of barley amounted to 3,846,000 bus, as against 884,000, and rye totaled 343,000 bus, compared with 18,000.

——BREAD IS THE STAFF OF LIFE——

BROKERAGE FIRM TO CLOSE BUFFALO OFFICE MARCH 14

BUFFALO, N. Y.—Thomson & McKinnon, security and commodity brokerage firm with main offices in New York City, will terminate its Buffalo commodity office after March 14, Manager Thomas H. Hyer has announced. The closing, after two and a half years of business here, is "the result of the artificial conditions created by the government's entrance into the grain business," according to Mr. Hyer.

The offices were in the Chamber of Commerce building. Mr. Hyer has been prominent in the grain and feed associations and Corn Exchange.

——BREAD IS THE STAFF OF LIFE——

ST. LOUIS OFFICERS RENAMED

ST. LOUIS, MO.—Members of the St. Louis Millers Club turned out in goodly number for the annual meeting and election of officers held at Hotel Statler on March 3. All officers were renamed: Andrew Baur president, L. C. Chase vice president and W. J. Krings secretary and treasurer. Ford Patterson, Denver Alfalfa Milling & Products Co., was accepted as a member.

——BREAD IS THE STAFF OF LIFE——

TORONTO CEREAL CHEMISTS HEAR DR. C. H. BAILEY

TORONTO, ONT.—A meeting of the Toronto section of American Association of Cereal Chemists was held at the Walker House here March 5. The visiting speaker was Dr. C. H. Bailey, dean and director of department of agriculture, University of Minnesota, St. Paul.

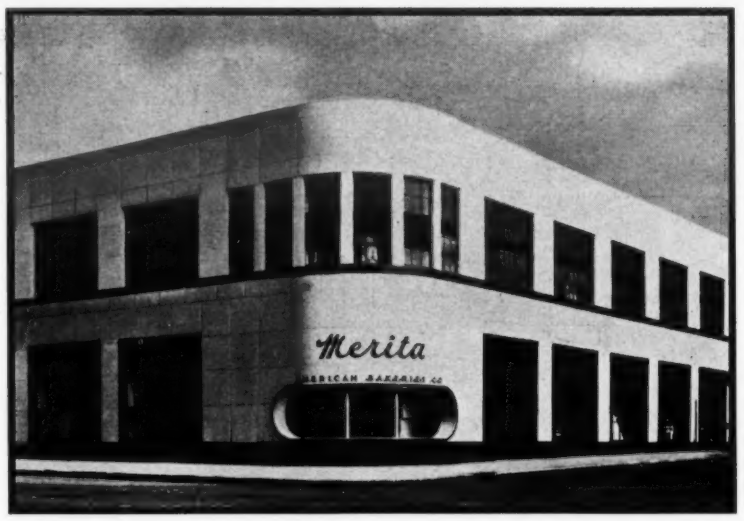
Dr. Bailey's address was on different physical chemistry determinations in the laboratory and was of particular interest to cereal chemists as it dealt to a large extent with production of flour and bread.

The next meeting of this association will be held on April 10.

GLOBE MILLING EMPLOYEES BACK RED CROSS

WATERTOWN, WIS.—A 100% response to the Red Cross special war relief fund was forthcoming from employees of the Globe Milling Co. here, the local Red Cross chapter has announced. This means that each employee had contributed $1.00 or more to the fund.

New Plant of American Bakeries



Back in 1902 a little corner bakery was born at Sixth Avenue and South Twentieth Street, Birmingham, Ala., the first plant of the American Bakeries Co., makers of Merita products. That was back in the horse and buggy days when all deliveries were made with horse drawn wagons. Today, 40 years later on that same corner, stands the new Highland plant of the American Bakeries Co., one of the finest and most modern in the country, operating 28 routes. The company now has 19 bakeries in 18 cities, through eight states of the Southeast—North Carolina, South Carolina, Virginia, Tennessee, Alabama, Georgia, Florida and Louisiana, serving over 36,000 retail food dealers, with general offices in Atlanta.

February Strikes Involve 357 Per Cent More Workers Than Were Idle in January

NEW YORK, N. Y.—The number of strikes in war production plants during February increased 77% over January, involved 357% more workers and resulted in 206% more man hours being lost than during the preceding month, the National Association of Manufacturers revealed here this week.

The association pointed out its report on strikes was compiled from reports in metropolitan newspapers and papers

in principal industrial centers and did not purport to cover every strike action.

Comparison of strikes during January and February, the association pointed out, indicated the policy of "Strikes as Usual" had not abated despite the seriousness of the war.

The association's tabulation of strikes follows:

	January	February
War industry strikes....	43	76
Men involved	15,512	70,905
Man hours lost	661,976	2,028,824
Non-defense strikes	25	27
Men involved	13,108	11,773
Man hours lost	1,750,224	1,192,152
TOTAL—		
Strikes	68	103
Men involved	28,610	82,678
Man hours lost	2,412,200	3,220,976

The strike report pointed out the man hours lost in defense plant strikes alone last month was the potential work time to build upwards of 200 four-engine bomber planes, or 2,000 dive bombers.

Majority of the strikes in defense plants involved CIO locals. Six strikes were jurisdictional disputes between CIO and A. F. of L. locals, 44 involved CIO and 22 A. F. of L. locals. The remainder involved independent unions.

A. F. of L. local unions were involved, the association said, in 20 of the 27 strikes at nondefense plants. Four strikes involved CIO locals and the three others involved independent unions.

The association pointed out a majority, if not all, of the strikes at defense plants could be described as "critical." Production of such vital and basic war products or materials as bomber parts, anti-aircraft guns, ships and ship parts, armor plate, machine tools and dies was delayed because of strikes, the report revealed.

Various reasons were offered to justify the strikes, according to the newspaper reports, but among the more unusual was that advanced by 160 welders who "walked out" because a foreman used "bad language." Another strike of 10,000 men was called because a worker slapped a co-worker in the plant.

——BREAD IS THE STAFF OF LIFE——

BARGAINING AGENT CHOSEN

CINCINNATI, OHIO.—The Retail Clerks Protective Association, an American Federation of Labor affiliate, was selected as bargaining agent by the clerks of the Kroger Grocery and Baking Co. The election, held in greater Cincinnati stores, showed 194 clerks in favor of the union and 49 opposed, Philip G. Phillips, regional director, National Labor Relations Board, reported.

Glenn R. Krueger

. . goes to the central division . .

Glenn R. Krueger has been appointed assistant general sales manager of the central division of General Mills, Inc., with headquarters in Chicago. He assumed his new duties March 2. Mr. Krueger recently has been director of flour merchandising for General Mills, with headquarters in Minneapolis. He started with the organization in 1925 as a clerk in the sales record department. He then became a member of the sales force and held positions in several cities. He has served as branch manager of the Milwaukee office of General Mills, Inc., and also as city sales manager in Chicago. Mr. Krueger was born in 1901, is married and has two children.

Loren W. Johnson

. . . elevated at Kansas City . . .

After serving for more than two years as assistant manager of the Cargill, Inc., branch at Kansas City, Loren W. Johnson has been appointed manager succeeding James W. Ringwald, who has been called to service in the naval aviation reserve corps. Mr. Johnson has served the grain firm in various positions since 1935, when he was graduated from the University of Minnesota.

Joe D. Williams

. . . in coast guard . . .

Joe D. Williams, an active partner of the flour and feed brokerage concern, Cohen E. Williams & Sons, Nashville, for the past seven years, volunteered his services and the use of a 30-ft Owens cabin-cruiser to the United States Coast Guard. Both offers were accepted. He reported for duty at St. Louis, Mo., on Feb. 24, and was sent from there to Fort Oglethorpe, Ga., for training. He entered the flour and feed brokerage business with his father and older brother, Cohen, Jr., after completing his schooling at Montgomery Bell Academy, Nashville.

W. H. Younger

. . heads three companies . .

W. H. Younger, former manager of the Preston-Shaffer Milling Co., Walla Walla, Wash., has recently become president and general manager of the Terminal Flour Mills Co., Portland, Oregon; the Spokane (Wash.) Flour Mills Co., and the Mark P. Miller Milling Co., Moscow, Idaho. The three mills are interests of the late Mark P. Miller. Mr. Younger, before being made manager of the Preston-Shaffer company in 1933, was manager and treasurer of Alco Flour, Inc., Los Angeles, a separate corporation connected with the Preston-Shaffer company. He was also associated with the Portland (Ore.) Flour Mills Co.

Personal & Otherwise

RECUPERATION

Peter McCary, Trenton (Ill.) Milling Co., is recuperating from an automobile accident which occurred on Nov. 17 between Statesboro and Savannah, Ga. He suffered a broken leg, shoulder injuries, broken ribs and cuts and bruises on his face and body. Mr. McCary hopes to be able to get about on crutches in another week or so.

TO SEE THE RACES

Carl W. Skogsberg, Oklahoma City manager for the Colonial Baking Co., with Mrs. Skogsberg, will join a group of Oklahoma City folk this month to go to Hot Springs, Ark., to see the horse races.

SERIOUSLY ILL

Clarence O. Case, for many years president of the New England Flour Co., Boston, Mass., is confined to the Robert Brigham Hospital there under special treatment and observation for a serious illness.

TO CHICAGO

Gordon B. Wood, sales manager Midland Flour Milling Co., Kansas City, left March 7 for Chicago to attend the convention of the American Society of Bakery Engineers.

BLACKOUT

Harold P. Bell, southern sales manager of Larabee Flour Mills Co., went through a practice blackout in Atlanta on his last trip South, and said from his high-up window in the hotel he could see not a single light.

TO THE SEABOARD

P. H. Baum, secretary-treasurer William Kelly Milling Co., Hutchinson, Kansas, is on a trip to the eastern seaboard.

AT CONVENTION

Phil A. Mohler, representative in Pennsylvania and Ohio for the William Kelly Milling Co., Hutchinson, Kansas, is attending the convention of the American Society of Bakery Engineers at Chicago this week. He was accompanied by two brothers, Fred Mohler and Dale Mohler, both bakers in Pennsylvania.

IN ACTIVE SERVICE

Second Lieutenant P. G. Rosenau, sales director package goods department, Valier & Spies Milling Co., St. Louis, has been called into active service.

RECOVERING

Walter Clegg, Clegg Bakery, Greensboro, N. C., is on the road to recovery from a serious illness.

AT BOARD MEETING

C. S. Broeman, president American Bakeries Co., Atlanta, spent last week in New York attending a meeting of the board of his company.

IN BROKERAGE BUSINESS

E. R. Crawford, 3203 Glenwood Avenue, Youngstown, Ohio, for a number of years representing the Midland Flour Milling Co. in Ohio, and before that with Russell-Miller Milling Co., more recently with First Cleveland Corp., has engaged in the brokerage business with several flour, feed and feed ingredient accounts and may take on others suitable for sale to bakers.

IN THE NAVY

C. P. Wilson, Jr., Cumberland Brokerage Co., Nashville, Tenn., has joined the navy.

IN OKLAHOMA CITY

R. M. Peek, Little Rock, Ark., broker, in Arkansas, was a recent visitor in Oklahoma City.

ON THE WAY HOME

Philip W. Pillsbury, president Pillsbury Flour Mills Co., Minneapolis, was in Ogden, Utah, March 6, en route from California to his home.

FAMILY REUNION

E. S. Thompson, New York flour broker, is attending a family reunion at Marysville, Kansas, his former home, where he will spend a few days with his brother from the state of Washington, who will soon be inducted into the army.

HOLE-IN-ONE

R. Reece Barber, of Beverly Hills, Cal., for many years manager of the Los Angeles office of the Washburn Crosby Co., but who retired six years ago after 30 years' service with the company, is now a full-fledged member of the "Hole-in-One" Club. He scored his ace on the 142-yard par-3 17th at the Los Angeles Country Club, during a tournament flight.

SON AND HEIR

A. E. Fairney, of Minneapolis, eastern sales mánager for the Commander Milling Co., is receiving congratulations from his friends on the birth of a son and heir.

IN SUNNY CLIME

Harry W. Larsen, of Habel, Armbruster & Larsen Co., Chicago, with his family, is spending a few weeks' vacation in Florida.

HOME FROM CALIFORNIA

Walter S. Johnson, of Johnson-Hiferbert & Co., returned to Chicago last week from a few months' visit with his daughter in California.

ADDRESSES BAKERS

George P. Urban, of the George Urban Milling Co., Buffalo, addressed the monthly meeting of the Boston Retail Master Bakers Association on March 3. His subject was the progress of the milling industry and the influence of science and research on standards of quality and uniformity.

GIVE MOBILE CANTEEN

Canteen workers of the Hennepin County, Minn., chapter of the American Red Cross were presented with a canteen

trailer donated to the chapter by Mrs. James Ford Bell and Mrs. James Ford Bell, Jr. Mrs. Richard Hersey is chairman of the canteen corps. Mmes. Totten P. Heffelfinger, Leslie Olson and Philip W. Pillsbury are among the other members of the unit. This canteen mobile is the first one to be brought into service in Minneapolis.

SOUTHERN VACATION

T. Stults, associated with his father, E. M., in the Buckeye Cereal Co., Massillon, Ohio, and family have been spending several weeks in Florida on vacation.

JOINS FLORIDA TREK

Charles T. Silverson, of Minneapolis, vice president and grain buyer for the Eagle Roller Mill Co., of New Ulm, is vacationing in Florida.

BY AIR TO COAST

John F. Diefenbach, of the Amber Milling Co., Minneapolis, left by plane March 9 for the Pacific Coast.

MEXICO SOJOURN

T. S. Paulsen, purchasing agent for the Russell-Miller Milling Co., Minneapolis, left last week with Mrs. Paulsen on a vacation trip to Mexico City.

VISITS CHICAGO

C. D. McKenzie, president McKenzie Milling Co., Quincy, Mich., was a Chicago visitor last week.

BOSTON VISITOR

Thurman Sherwood, vice president and general manager of the Walnut Creek Milling Co., Great Bend, Kansas, was a New England visitor, calling on Charles P. Case, his company's representative in Boston.

CHAMPION HURDLER

Bernard J. Rothwell II, son of Paul T. Rothwell, president of the Bay State Milling Co., Boston, won the title of national interscholastic champion in the 60-yard high hurdles at a recent meet held at Madison Square Garden, New York. His time, 7.6 seconds, equaled the meet record.

NAVAL AIR CORPS ENLISTEE

John O. Giles, assistant treasurer of the Millers National Insurance Co., has enlisted in the U. S. Naval Air Corps Reserve and is stationed at Quonset Point, R. I.

AT PRINA OFFICE

John L. Dower, president Colorado Milling & Elevator Co., Denver, recently paid a brief call at the New York offices of the Frank R. Prina Corp.

IN SALES JOB

Thomas F. Murphy, formerly of the Murphy Brokerage Co., Nashville, Tenn., has joined Cohen E. Williams & Sons in the capacity of salesman.

ABLE TO BE ABOUT

Joseph R. Johnston, bakery machinery and equipment broker of Atlanta, Ga., has recovered sufficiently from injuries sustained in an automobile accident to make a trip via train to the Carolinas.

JOINING THE ARMY

H. H. Kanatzer, Jr., salesman for Chase Bag Co. out of the Denver office, is being inducted into the Army March 15. Mr. Kanatzer's father is manager of the Hutchinson branch for Chase. The two have been widely known in the Middle West as a low scoring father and son golf team. A few years ago young Kanatzer was a basketball star for Kansas University.

MIAMI VACATION

Raymond F. Kilthau, New York flour broker, is on a month's vacation at his Miami Beach home.

—BREAD IS THE STAFF OF LIFE—

FRANK EBERLY IS MANAGER OF RUSSELL MILLING CO.

KANSAS CITY, MO.—Frank Eberly, for many years superintendent of the Russell (Kansas) Milling Co., was made general manager of the firm last week upon resignation of Frank M. Ross, manager there for the last two years.

Mr. Eberly is a stockholder and director of the company and undoubtedly will continue to supervise to some extent the production in addition to his new duties of handling sales and business management.

Gary Eberly, son of the new manager, has been a flour salesman for the Russell company and is being brought in from his Illinois territory to handle wheat buying and office detail.

Mr. Ross, who formerly was manager of the Grand Island, Neb., plant for Nebraska Consolidated Mills Co., continues as a director of the Russell firm.

—BREAD IS THE STAFF OF LIFE—

VICTOR CHEMICAL WORKS REPORTS HIGHER INCOME

CHICAGO, ILL.—Victor Chemical Works reported net income of $1,187,224 in 1941, equal to $1.58 a share on 749,000 shares. This compares with $1,090,223, or $1.57 on 695,000 shares in 1940. Tax provisions for 1941 amounted to $1,091,000, an increase of $684,300 over the previous year.

President A. Kochs, in his annual report to stockholders, stated that sales increased to $11,206,356 in 1941 from $8,486,734 in the preceding year. Mr. Kochs attributed this increase to the larger output from all of the company plants and to the operation of an additional electric furnace, which was installed at Mount Pleasant, Tenn.

The balance sheet as of Dec. 31, 1941, showed total current assets of $4,359,707, with $1,476,128 cash, and current liabilities of $944,349. This compares with 1940 current assets of $3,463,969 and current liabilities of $1,063,817.

Bakery Engineers

(Continued from page 9.)

caused the present rationing of sugar. Although sugar consumption has increased from some 60 lbs per capita a number of years ago to an apparent disappearance of 111 lbs per capita last year, Mr. Shiverdecker said the per capita intake last year probably was not over 101 lbs, the difference of 10 lbs representing increased inventories.

Due to labor shortages and other difficulties, the speaker said, bakers could look forward to sugar rationing for the next two years. The percentage of last year's consumption awarded bakers (80%) is greater than candy or beverage manufacturers get, due to the fact that the latter increased their consumption in 1941 over normal to a greater extent than bakers.

Considerable savings in sugar can be made by careful application of icing, Mr. Shiverdecker said, and declared that his firm has been able to make such savings of 25% to 30%. He suggested greater use of honey, malt syrups and milk to supplement sugar supplies.

Mr. Jassoy pointed out that the use of higher protein flours can compensate for color, and longer extraction flours also have a place. Salt content must be adjusted when sugar is lessened and shortening must be reduced. In the use of commercial dextrose, malt products, etc., the effect on color must be watched. He recommended that in using these an emulsion with 1% potato flour be prepared.

The speaker reviewed some of the practices adopted in the last war to conserve sugar, pointing out that he was not recommending these practices, but merely calling attention to them. Home-made converters in the bakery are subject to variations that can cause trouble.

The American Association of Cereal Chemists took a part in the program again this year, and, as Dr. C. N. Frey, of Standard Brands, Inc., said in introduction: it is the objective of the chemists' group to bring their findings to bakery engineers in a way that will be helpful.

The use of wheat germ in commercial bread baking was discussed by Miss Betty Sullivan, Russell-Miller Milling Co., Minneapolis, who pointed out that the germ is high in vitamin B complex and vitamin E, as well as minerals, protein and fat. The last is responsible for its poor keeping quality, she said.

If all white flours were to be fortified with added wheat germ to the original wheat level, there would not be enough wheat germ to go around, she pointed out, since millers cannot recover more than about 15% of the total germ. Nor would it be possible with wheat germ alone to raise the vitamin and iron content of flour to the present level required for enriched bread.

However, many persons feel that the addition of wheat germ gives an additional tasty flavor, which is regarded as a sales advantage in enrichment, since it makes it apparent to the eater that the bread has been altered.

Use of more than 3% wheat germ alters the character of the bread produced, and where more than 5% is used a decidedly inferior loaf results, Miss Sullivan said. Therefore, it is wise to take precautions in adding wheat germ, and she recommended use of a strong flour with good tolerance, extra yeast food, or long time sponges and slight increase in yeast food, and milk.

In addition, a pre-ferment of the germ is effective. It is mixed with yeast and water, let stand for two to three hours before going into the mixer. This oxidizes the glutathione. Several products are on the market, Miss Sullivan said, that consist of a specially treated wheat germ, and these work satisfactorily up to 3%.

Continuing the study of absorption in the bread making process, George Garnatz, of the Kroger Food Foundation, Cincinnati, reported the results of some experiments made with the assistance of his associate, E. G. Kornreich. In general, these confirmed last year's findings and added detail to the study.

The conclusions: Mixing time is lengthened as absorption is increased. Extra pounds of finished product are obtained as absorption is increased, between 52% and 93% of the extra water being recovered as bread. There is a slight increase in oven loss with increased absorption. The "divider to slicer" loss is determined more by oven conditions and the control thereof than by absorption. As absorption is increased, the efficiency of converting dry matter of ingredients to bread is improved. Staling of bread is retarded by increased absorption and bread holds its softness better, but there is no significant response in this respect to small changes in absorption. In general, bread taste is not adversely affected by increased absorption.

Assisting with arrangements of the Engineers' convention was day chairman Adrian J. Vander Voort, Dunwoody Institute and THE AMERICAN BAKER, Minneapolis, Minn.

Victor Marx, in his eighteenth annual report as secretary of the society, reviewed the varied activities of the organization and announced an addition of 47 new members.

Bill Cunningham, sports columnist of the Boston *Herald* and sports editor of *Liberty* magazine, in the inspirational address which traditionally opens the convention, made a plea for greater team play in the nation's war effort.

Walter Molloy, Fluhrer Bakeries, Eureka, Cal., is convention chairman. C. E. Jones, Midland Bakeries Co., Peoria, Ill., was chairman on opening day, with Clinton L. Brooke, National Grain Yeast Corp., Chicago, presiding on the second day. Program chairman for the convention is Frank Coughlin, Procter & Gamble, Ivorydale, Ohio, assisted by A. E. Grawert, Pillsbury Flour Mills Co., Minneapolis.

OBITUARY

J. L. HOWE

J. L. Howe, former Minneapolis grain and lumberman, died last week at his home in Carrington, N. D., in his 68th year. He was at one time vice president of the Imperial Elevator Co., Minneapolis.

E. E. DAUNER

E. E. Dauner, El Paso, Texas, former salesman for the Enid (Okla.) Milling Co., died Feb. 28.

'42 WHEAT PROBLEMS INTENSIFIED BY WAR

Trade Impediments Cause Concentration of Supplies in Exporting Countries and Shortages in Europe

Lack of freedom in international trade in wheat this year has greatly augmented the wheat surplus problems of the chief exporting countries and the shortages endured in Europe and other deficit regions, Helen C. Farnsworth and Bernhardt M. Jensen report in their "World Wheat Survey and Outlook, January, 1942."

The writers believe that world wheat exports will be considerably smaller in the present crop year than they were in 1940-41. They put the probable reduction at 75,000,000 to 100,000,000 bus, implying a world export total of 400,000,000 to 425,000,000 bus. Within this range, world exports of wheat and flour would be the smallest since 1896-97.

Of the record world wheat supplies of 1941-42, Miss Farnsworth and Mr Jensen found that roughly half was concentrated in the four chief exporting countries of United States, Canada, Argentina and Australia, the largest proportion since 1928-29. In contrast, domestic wheat supplies in continental Europe were relatively the smallest in two decades. This abnormal distribution of supplies was associated with storage congestion and other problems of surplus in the four exporting countries and with an increasingly serious bread position in continental Europe.

Within continental Europe aside from Russia, there has been wide variation in bread and general food positions of the different countries, the report states. Only Switzerland and Portugal have continued to sell bread without ration cards. These two countries, Germany, Denmark, Sweden and the Netherlands appear so far to have enjoyed the best food conditions outside of the Danube basin. Famine has existed in the large cities of Greece and Poland, and many persons in Spain, Belgium, France and Finland have suffered chronic hunger. Generally throughout continental Europe, bread rations were lower in December, 1941, than a year earlier, and in several countries they have been reduced since last spring.

During August-December the imports of the United Kingdom appear to have been of about average size, the writers found, but those of the Continent were far below average and insufficient to cover current needs. Oriental imports, already reduced, ceased on the outbreak of war in the Pacific. International trade in wheat in the latter half of the crop year is expected to be similarly restricted.

The outlook is obscure for both European and non-European imports of wheat from January to July, 1942, the remainder of the crop year. Much depends on the course of the war—particularly as regards shipping on the two oceans—and on decisions to be made by British officials with respect to the maintenance of heavy emergency reserves of wheat, the writers observe. It seems reasonable to suppose, they say, that European net imports might total 250,000,000 to 275,000,000 bus during 1941-42 and non-European net imports, including Russia's takings, 115,000,000 to 120,000,000 bus. These ranges, together with allowances for wartime sinkings and for other factors that cause import and export aggregates to differ, suggest the world net export total of not more than 400,000,000 to 425,000,000 bus in the current crop year.

Government regulations, in both exporting and importing countries, have recently either fully controlled or heavily influenced wheat prices. Prices in domestic currencies have generally been higher this year than last. In United States they have been sharply higher. In many countries, however, the purchasing power of wheat over other commodities has fallen, the writers found.

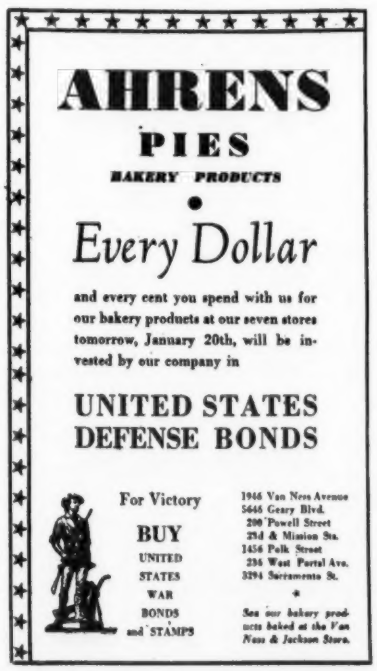
The study is published as Vol. XVIII, No. 5, of the Wheat Studies series of the Food Research Institute, Stanford University, California.

—BREAD IS THE STAFF OF LIFE—

GROCERS HONOR A. C. MONAGLE

NEW YORK, N. Y.—The luncheon to past presidents of the Associated Grocery Manufacturers of America held March 2 at the Pennsylvania Hotel, paid particular honor to past-president A. C. Monagle, former vice president of Standard Brands, Inc., now retired. In his absence and on his behalf, Col. S. R. Snapp, of the company's grocery sales department, received the framed certificate of appreciation for his long career in the industry and his services to the association in earlier days.

Walter Pfluger, Rumford Baking Powder Co., current president, presided. The chief speaker, Paul S. Willis, president of the Associated Grocery Manufacturers of America, told the audience that the better part of patriotism was not in accepting hastily-drawn regulations by agencies, subject to change before management can adjust its operations to them, but it was better to seek a more co-ordinated action by the agencies, made aware of the results of such regulations on the food industry.


AHRENS
PIES
BAKERY PRODUCTS
Every Dollar
and every cent you spend with us for our bakery products at our seven stores tomorrow, January 20th, will be invested by our company in
UNITED STATES DEFENSE BONDS
For Victory
BUY
UNITED STATES WAR BONDS and STAMPS
1946 Van Ness Avenue
5645 Geary Blvd.
200 Powell Street
23d & Mission Sts.
1456 Polk Street
236 West Portal Ave.
3294 Sacramento St.
See our bakery products baked at the Van Ness & Jackson Store.

Ahrens, with seven retail outlets in San Francisco, Calif., recently ran a campaign in support of the "Buy United States War Bonds and Stamps" movement. Center of the campaign was a public announcement that on a certain day every dollar and cent spent with the bakery would be invested in United States Defense Bonds. The campaign was forwarded by newspaper advertising and point-of-purchase show cards that made the announcement.

INCREASED LIVESTOCK FEED DEMAND EXPECTED SOON

Rapid Expansion in Production of Hogs, Poultry Under War-Food Program Cited by U. S. D. A.—Supplies Per Animal Slightly Less Than Year Ago

WASHINGTON, D. C.—The Department of Agriculture has indicated that a rapid expansion in the production of hogs and poultry under the war-food program was expected to provide an unusually strong demand for livestock feed this year.

The number of livestock on farms is now the largest since the peaks of 1923 and 1933 and is expected to be the largest on record by the end of the year.

Feed supplies per animal were said by the department to be slightly less than a year ago.

"Changes in feed prices during the next few months will be limited," the department said, "by the government's program to encourage wheat feeding and by other measures taken by the department to make larger supplies of feed available for increased production of livestock.

"Later in the year feed grain prices will be influenced by prospects for 1942 crops and probably to some extent by the government loan rate on 1942 corn."

Feeding ratios for the country as a whole, except for the butterfat feed-price rate were said to be generally favorable to livestock producers. The price of butterfat has been low, relative to feed grain prices, since last October.

Hay prices were unusually low, relative to butterfat prices last summer, but the advance in hay prices since August has brought hay and butterfat prices to about the same relationship as the 1920-39 average, the department reported.

The price of corn per pound was said to be low relative to other feed grains. Of the high protein feeds, the price per ton of cottonseed meal was the lowest in the Midwest, while in the East the price of linseed meal was the lowest.

The relation between egg and feed prices was said to be less favorable to producers than a year ago, but to be more favorable than the average for the 10 years 1931-40.

"Comanche" Is Recommended to Millers and Grain Men

MANHATTAN, KANSAS.—Dr. E. G. Bayfield, head of the Department of Milling Industry, Kansas State College; E. L. Betton, inspector in charge, Kansas City office of Kansas Grain Inspection Department, and Dr. John H. Parker, director of the Kansas Wheat Improvement Association, Manhattan, attended and spoke at three recent wheat meetings held at the Salina, Hutchinson and Wichita boards of trade.

At each of these meetings Dr. Parker presented up-to-date figures on yields of winter wheat varieties at branch experiment stations and regional experimental fields in Kansas. Millers and grain men attending were particularly interested in the favorable report on Comanche, a new hybrid wheat recently named and approved for distribution by Kansas State College. This variety is a selection from a cross between Tenmarq and Oro, a bunt resistant Turkey selection from Moro, Oregon, an experiment station in eastern Oregon in a dry land region similar to western Kansas. Comanche produces higher yields and grain of heavier test weight than Tenmarq. Its milling and baking qualities are declared to be excellent.

Mr. Betton said that he and his associates in the Kansas Grain Inspection Department are studying kernel characteristics of hard red winter wheats, so that they can identify some of them, if this becomes necessary.

In his talk at Salina, Dr. Bayfield used illustrations of loaves of Turkey, Tenmarq and Chiefkan, baked by Elmer Modeer, St. Joseph Testing Laboratories. Loaves of Turkey and Tenmarq had large volume and excellent quality. Chiefkan baked a small loaf of poor quality.

At Hutchinson, Dr. Bayfield showed loaves of Tenmarq and Chiefkan milled and baked in the Department of Milling Industry, Kansas State College. The Tenmarq was grown at Manhattan and had about 1% less protein than the Chiefkan grown at Dodge City. In spite of the lower protein content of Tenmarq, it baked a much larger, better quality loaf than Chiefkan.

At Wichita, Dr. Bayfield exhibited loaves of Turkey, Tenmarq and Blackhull of normal volume and good quality, baked by L. E. Leatherock and John Giertz in the laboratories of Kansas Milling Co. In sharp contrast, the loaf of Chiefkan, baked under the same conditions, was small and of poor quality.

—BREAD IS THE STAFF OF LIFE—

NEW MEXICO BAKERS PLAN CONVENTION FOR MAR. 28

ALBUQUERQUE, N. M.—The New Mexico Bakers Association will hold its 1942 convention at Albuquerque March 28. G. D. Stephens is secretary-treasurer.

SAFETY FOR SUGAR

NEW YORK, N. Y.

Barges which will pass through the Florida keys and then via protected canals, bays and rivers along the seaboard to refineries, are planned to transport Cuban sugar this year. From 1,000,000 to 1,500,000 tons can be moved this way if present plans calling for about five barges carrying 600 to 700 tons, are consummated. Some barges and tugs are already available but additional building would not be difficult since they do not contain critical ship building materials. If the plan proves successful, it will doubtless be extended to cover other commodities.

RAILROADS TURN DOWN CARLOADING PROPOSAL

Grain Shippers' Request for New Minimum Carload Weights Found Not Feasible

Western railroads on March 3 rejected proposals by the nation's grain interests to establish new minimum carload weights of 80,000 lbs for whole grains and flaxseed and 64,000 lbs for oats and screenings.

The proposals, stemming from the Interstate Commerce Commission's service order No. 68, designed to help conserve the freight car supply in the interests of the nation's war effort, were proposed to aid the country grain shippers who, the grain trade felt, were being treated with undue harshness as a result of the ICC order.

Under the present ruling, the grain shippers are required to load to full capacity of the freight cars. Under the old tariffs which prevailed, the shipper who ordered a smaller car and got a large one instead at the carrier's convenience, was required to use the equipment, paying only on the basis of the minimum weight ordered and not on the size of the car.

CAPACITY USE SOUGHT

The ICC, aiming at full capacity use of all railroad equipment as a wartime conservation measure, issued small car order No. 68, and canceled as of Feb. 15, last, shipments of grain, hay, coal and all commodities calling for freight cars of small carrying capacity in disregard of the extremely limited number of such cars.

In order to soften the effect of this order, considered as a blow to the interests of the small grain shipper, who had adhered generally to the practice of ordering cars of 60,000-lb capacity (extremely limited in number) the grain shippers of the country proposed to the Western Trunk Line Committee and the Transcontinental Freight Bureau, at the Chicago Union Station on March 3, that the railroads agree to bring the proposal before the ICC for its approval.

It was this approval which the railroads rejected.

The existing minimum weight rules, grain shippers said, were published 20 years ago when a great number of 60,000-lb cars were in use, of which, a grain shipper said, "very few are left today."

If the 80,000-lb minimum weight is adopted, one of the spokesmen said, "it is my opinion that it will have a tendency to increase loading of grain, and serve to eliminate calls for 60,000-lb capacity cars."

The shippers outspokenly admitted that the present rule of the ICC will work hardships on the small grain shippers.

——BREAD IS THE STAFF OF LIFE——

NATIONAL TEA CO. REPORTS GAIN AT SEVEN-YEAR HIGH

CHICAGO, ILL.—The National Tea Co. reported its 1941 net profit as the largest in seven years and its net sales the best since 1931.

President John McKinlay, in his report to stockholders, disclosed that the 1941 net income was $425,152, equal to 55c a common share, compared with $346,391, or 43c a share in 1940. Net sales totaled $72,181,689 in 1941, against $61,919,443 the previous year, a gain of 16.5%.

"In 1942 we plan to clear the remaining arrearage of $91,827 on the preferred dividends and place this payment on a regular quarterly schedule," Mr. McKinlay stated. He said that in 1941 the company had paid two years' accumulation.

Thirty-six new locations were opened, and 83 were closed by the National Tea Co. in 1941, with a total of 1,015 stores in operation as of Jan. 1. "The improvement in general business conditions, together with the efforts of our own staff, has made 1941 a better year for us. Probably some hoarding of certain food items on the part of consumers is also responsible," Mr. McKinlay stated. He said retail prices have not advanced in proportion to the company's wholesale costs and attributed this to a "natural lag" between wholesale and retail prices in a rising market.

SEMOLINA MARKETS

Minneapolis: Prices seem badly demoralized; not much new business, but so much competition for it that list prices are ignored; buyers helping matters by claiming offerings at 40@50c under market; durum mills temporarily swamped with shipping directions and running close to capacity; continuation of present running time would mean healthy reduction of business on mill books, so fresh buying might be looked for soon; fancy No. 1 semolina $6.40@6.50 bbl, bulk, f.o.b. Minneapolis; standard $6.10@6.20, granular $6@6.10.

In the week ended March 7, nine Minneapolis and interior mills made 89,210 bbls durum products, against 90,557 in the previous week.

Buffalo: Demand light and sales contracts considerably slowed up; chief reason was uncertainty over new national legislation; trend steady; supply ample; No. 1 $7.70, durum fancy patent $7.70, macaroni flour $6.90, first clear $5.50, second clear $4.55, durum granular $7.30.

New York: Business dull, with little inquiry; No. 1 fancy, bulk $7.10@7.20.

Philadelphia: Market ruled steady, with moderate offerings; demand limited; No. 1 durum semolina, $6.60, bulk.

St. Louis: Prices unchanged; sales and shipping directions fair; first grade semolina $7.75, granular $7.30, No. 3 $7.10, durum fancy patent $7.75.

Pittsburgh: Moderate; trend steady; supply ample; No. 1 $7.25.

Chicago: Business has slowed up; only a few small sales made; No. 1 semolina, $6.60@6.85.

United States Grain Stocks

Commercial stocks of grain in store and afloat at the principal markets of the United States at the close of the week ending March 7, 1942, and March 8, 1941, as reported to the United States Bureau of Agricultural Economics, in bushels (000's omitted):

	American		Canadian in bond	
	Mch. 7 1942	Mch. 8 1941	Mch. 7 1942	Mch. 8 1941
Wheat	247,274	150,489	17,836	42,780
Corn	61,158	70,697	...	...
Oats	7,241	4,558	31	335
Rye	17,228	5,332	1,538	3,470
Barley	9,288	7,060	635	265
Flaxseed	4,343	4,241	...	...

Stocks of United States grain in store in Canadian markets March 7 (figures for corresponding date a year ago given in parentheses): wheat, 215,000 (228,000) bus; corn, 2,484,000 (69,000); oats, 5,000 (none); rye, 24,000 (24,000); barley, none (none).

Bonded Grain in the United States

Bonded grain in the United States March 7, in bushels (000's omitted):

	Wheat	Corn	Oats	Rye	B'r'y
Baltimore	1,521	..	..	..	..
Boston	2,243	..	..	..	..
Buffalo	4,247	..	27	..	..
Afloat	244	..	..	342	..
Milwaukee—					
Afloat	..	..	..	77	635
New York	3,202	..	..	..	..
Afloat	530	..	..	..	..
Philadelphia	565	..	..	..	..
Totals	12,552	..	27	419	635
Feb. 28, 1942	13,217	3	38	468	635
March 8, 1941	31,683	..	124	2,565	265

Millfeed Receipts and Shipments

Receipts and shipments of millfeed at the principal distributing centers for the week ending March 7, in tons, with comparisons:

	Receipts		Shipments	
	1942	1941	1942	1941
Minneapolis	...	...	8,600	7,450
Kansas City	1,600	2,250	4,650	5,500
Philadelphia	160	400	...	...
Milwaukee	80	...	2,600	2,840

Flaxseed Receipts, Shipments and Stocks

Receipts, shipments and stocks of flaxseed at principal primary points for the week ending March 7, in thousand bushels, with comparisons:

	Receipts		Shipments		Stocks	
	1942	1941	1942	1941	1942	1941
Minneapolis	122	133	11	35	3,036	3,778
Duluth	1	28	..	..	1,068	462

MARKETS IN DETAIL

U. S. FLOUR MARKETS

THE SOUTHWEST

Kansas City: Although sales are somewhat better in the Southwest, most of the increase can be attributed to army orders and one or two fair-sized purchases. Sales reached 48% of capacity, compared with 21% the previous week and 27% a year ago. Apparently stocks are heavy in the hands of bakers and jobbers, for directions are still hard to obtain. Running time increased to 67% of capacity, but still is under the rate of a year ago.

For the most part, buyers are satisfied to wait and fill in what little they need to round out the year whenever the market seems "right." Millers, too, are spending much more time getting directions than new sales.

Clears tighter, with demand picking up and supplies not nearly so prevalent. Export business still fair. Since the first of the year volume has been somewhat better than average.

Quotations, March 7: established brands family flour $6.90@7.15, hard winter short patent $5.85@6.10, 95% $5.70@5.90, straight $5.60@5.80, first clear $4.05@4.25, second clear $3.75@4, low grade $3.60@3.75.

Of the mills reporting, 2 reported domestic business fair, 6 quiet, 6 slow and 9 dull.

Oklahoma City: Dull; sales averaging 27% compared to 40% last week. A small amount of flour exported to American neighbors. Bakers took 70% of domestic bookings, balance going to family trade. Operation declined, averaging 62% compared with 68% last week. Prices steady, closing unchanged. Quotations, March 7: hard wheat short patent flour $6.80@7.85, soft wheat short patent flour $6.80@7.85, standard patent $6.50@7.45, bakers extra fancy $6.30@6.40, bakers short patent $6.15@6.25, bakers standard $6.10@6.20.

Omaha: Sales 35 to 45% of capacity; mills operated four to six days and nights, producing 27,300 bbls. Shipping directions on former contracts rather slow due to recent relatively large shipments. Quotations, March 7: family fancy short patent $6.45@6.75, standard patent $5.85@6.15, bakers short patent $5.85@6.15, bakers standard patent $5.50@5.90.

Wichita: Sales slow, ranging from 20% to almost nothing; directions from 65 to 85%; prices unchanged.

Hutchinson: Stimulus lacking; sales negligible; buyers showing no interest and only a few single cars sold. Shipping directions satisfactory.

Salina: Millers report a rather indifferent demand, with prices unchanged. Shipping directions show some improvement.

Texas: Demand as dull as ever, mainly a local affair, confined to home territory, for prompt shipment, and chiefly family. Sales with different mills from almost nothing in some cases to 20 or 25% of capacity with possibly the majority. Shipping directions rather unsatisfactory, but operations average 50% of capacity. Prices unchanged, except clears slightly higher; millfeed also up. Quotations, March 6: family flour 48's, extra high patent $7@7.50, high patent $6.50@7, standard bakers 98's $6.15@6.50; first clears, sacked $4.90@5.10, delivered Texas common points or Galveston domestic rate.

THE NORTHWEST

Minneapolis: Business just about at standstill. For two weeks or more, it has been next to impossible to interest buyers in adding to holdings, and, more important, to get them to order out flour more than past due. Lack of directions really causing more concern than fresh bookings, since trade has more coming than normal at this season. Either buyers overbought or business has not been as anticipated. Clears also, in sharp request most of crop year, moving slowly.

Some export inquiry from Latin American markets, but bookings limited because of difficulty in booking vessel space.

Total reported business by spring wheat mills for week ending March 7 was around 27% capacity, compared with 24% week earlier and 30% year ago.

Quotations, March 10: established brands of family patent $6.40@6.65, spring first patent $6.30@6.40, standard patent $6.20@6.30, fancy clear $5.95@6.15, first clear $5.60@5.85, second clear $3.90@4.50, whole wheat $6, graham standard $5@5.50.

Of the 15 Minneapolis mills, the following were in operation March 10: King Midas, Northwestern Consolidated A, Pillsbury South A, Durum A, Graham and Phoenix, Russell-Miller, Washburn Crosby A, C, F, Rye and Whole Wheat.

Interior Mills, Including Duluth: Another very quiet week, with new bookings below normal; trade apparently overbought, very slow about ordering forward. With production curtailed, no difficulty experienced in disposing of feed made at remunerative prices; a few lots sold for April-May shipment at current levels.

Duluth: Quotations, March 7: first patent $6.80, second patent $6.60, first clear $6.20.

THE CENTRAL WEST

Chicago: Trade extremely quiet; bakery trade not interested; sales few in number and chiefly in small lots, with one order of 2,500 bbls reported. Directions have also slowed up, with mills pressing agents for shipping restrictions. Family also quiet, with a further slowing up in demand and deliveries. Quotations, March 7: spring top patent $6.05@6.50, standard patent $5.85@6.35, first clear $5.50@5.95, second clear $3.85@4.10, family flour $8.15@8.30; hard winter short patent $6@6.35, 95% patent $5.75@6.10, first clear $4.75@5.10, soft winter short patent $5.90@6.25, standard patent $5.60@6, first clear $4.70@5.20.

St. Louis: Reports from local mills consist of one of the dullest periods in many a long day. Practically no record of large or small contracts being placed on the books. Usual car lot orders missing. However, there is a very good demand for the better class of clears at a better price. Second clears draggy. Jobbers advise very little change in the situation of the past few weeks. Shipping directions slow. Quotations, March 7: soft wheat short patent $6.35@7.25, straight $5.65@6.05, first clear $5@5.50, hard wheat short patent $5.60@6.30, 95% $5.45@5.95, first clear $4.65@5.05, spring wheat top patent $5.80@6.30, standard patent $5.65@6.05, first clear $5.50@5.95.

Toledo: Business receding from recent buying surge, many buyers in position to defer further purchases until after more definite governmental action. Toledo bid for No. 2 red wheat, 26c rate points to New York, March 6, was $1.27, 2¼c under close of Chicago May future. Quotations, March 6: soft winter wheat standard patent $5.95@6.10; locally made springs, high gluten $6.80, bakers patent $6.55, hard winter wheat bakers patent $6.45, in 98's, f.o.b. Toledo or mill.

Cincinnati: Market demand extremely dull, with prices practically steady, and within the past three weeks showing very little change; supplies on all grades ample. Quotations, March 9: spring short patent family $7@7.25, standard patent $6.50@6.75, first clear $5.50@5.75, hard winter short patent family $6.50@6.75, standard patent $6@6.25, first clear $5.25@5.50, soft winter patent $6@6.25, standard patent $5.75@6, first clear $5@5.25.

EASTERN STATES

Buffalo: An air of hesitancy and uncertainty overhung the market, which was reflected in a light demand and relatively light bookings of new contracts. The trade's chief interest was in pending legislation, but there were other matters such as conservatism arising from income tax difficulties. Buyers probably more tax-conscious than they have been for a long time and very slow to respond to sales appeals. A slight slowing up in directions but, generally speaking, these are holding up fairly well. The buying caused by consumer hoarding in the family trade began to show signs of letting up and apparently consumers are realizing that so far as flour is concerned, there will be plenty. Clears in fair demand. Prices unchanged. Foreign trade routine.

Quotations, March 7, in 98-lb cottons: spring fancy patent $8.40@8.50 bbl, top bakery patents $6.75@6.85, standard patent $6.65@6.75, spring straights $6.55@6.65, spring first clears $5.95@6.05, soft winter short patent $7@7.10, pastry $5.85@5.95.

New York: Business varyingly reported as "slow, quiet, dead, completely lacking," and by similar adjectives throughout the trade. Occasional routine cars all that closed in practically all channels as consumer interest is at a low ebb, with the smaller and medium-sized bakers showing a decidedly lowered demand. In spite of this, however, shipping directions improved and several mill representatives indicated that, in general, permits from Brooklyn eastern district were received a little more freely. The trade reports slowness in collections due to bakers being overbought on commodities of which there is a shortage which must be paid for promptly, thus diverting payments that should be used for flour. Another handicap under which cake flour brokers have been working is the embargo by several railroads on any shipments destined for the BEDT. According to the Pennsylvania and other carriers they already have so many cars piled up awaiting permits for this terminal that they are not willing to bring on any more even though a permit for delivery there has been received. Fortunately all Pennsylvania mills are not situated on these lines, so this business is not completely shut off.

With the limited demand, quotations frequently not competitive and merely a starting point for negotiations. Quotations, March 7: spring high glutens $6.80@7.10, standard patents $6.45@6.70, clears $6.15@6.35, Texas high glutens $6.45@6.50, Kansas high glutens $6.35@6.50, 95's $6.20@6.40, soft winter straights $6@6.20.

Boston: No new business uncovered; trade completely disinterested in making deferred commitments until market shows more positive trend or present bookings are more depleted. Latter condition not expected for several months. Aggregate sales small and nothing better than an occasional minimum car lot reported. Bakers and jobbers accounted for the total in about equal proportions with no particular type being favored. Family sales much lower. These users well stocked from previous heavy buying and there is no incentive by way of a price increase to stimulate sales. Shipping directions have slowed up notice-

A SUMMARY OF FLOUR QUOTATIONS IN LEADING MARKETS

Week-end flour quotations, per bbl of 196 lbs, packed in 98-lb cottons or 140-lb jutes. All quotations on basis of carload lots, prompt delivery.

	Chicago	‖Minneapolis	Kansas City	St. Louis	Buffalo	New York	Baltimore	Philadelphia	Boston	Cincinnati	†Nashville
Spring first patent	$6.05@ 6.50	$6.30@ 6.40	$....@....	$5.80@ 6.30	$6.75@ 6.85	$6.80@ 7.10	$6.90@ 7.15	$6.70@ 6.90	$6.85@ 7.05	$7.00@ 7.25	$6.85@ 7.45
Spring standard patent	5.85@ 6.35	6.20@ 6.30	....@....	5.65@ 6.05	6.65@ 6.75	6.45@ 6.70	6.65@ 6.85	6.60@ 6.70	6.70@ 6.85	6.50@ 6.75	6.55@ 6.85
Spring first clear	5.50@ 5.95	5.60@ 5.85	....@....	5.50@ 5.95	5.95@ 6.05	6.15@ 6.35	....@....	6.15@ 6.25	6.35@ 6.55	5.50@ 5.75	....@....
Hard winter short patent	6.00@ 6.35	....@....	5.85@ 6.10	5.60@ 6.30	....@....	6.35@ 6.50	6.55@ 6.75	6.45@ 6.65	6.70@ 6.85	6.50@ 6.75	6.40@ 6.85
Hard winter 95% patent	5.75@ 6.10	....@....	5.70@ 5.90	5.45@ 5.95	....@....	6.20@ 6.40	6.35@ 6.60	6.30@ 6.45	6.50@ 6.70	6.00@ 6.25	6.10@ 6.40
Hard winter first clear	4.75@ 5.10	....@....	4.05@ 4.25	4.65@ 5.05	....@....	....@....	....@....	....@....	....@....	5.25@ 5.50	....@....
Soft winter short patent	5.90@ 6.25	....@....	....@....	6.35@ 7.25	7.00@ 7.10	....@....	6.70@ 7.40	....@....	6.40@ 6.70	6.00@ 6.25	6.75@ 7.45
Soft winter straight	5.60@ 6.00	....@....	....@....	5.65@ 6.05	....@....	6.00@ 6.20	*5.30@ 5.65	*5.65@ 6.00	6.20@ 6.40	5.75@ 6.00	6.45@ 6.75
Soft winter first clear	4.70@ 5.20	....@....	....@....	5.00@ 5.50	....@....	....@....	....@....	....@....	5.95@ 6.20	5.00@ 5.25	5.85@ 6.15
Rye flour, white	4.75@ 5.25	4.50@ 4.90	....@....	....@ 5.65	....@ 5.95	5.15@ 5.65	....@ 5.30	5.20@ 5.40	....@....	4.50@ 4.75	....@....
Rye flour, dark	3.70@ 4.40	3.70@ 4.20	....@....	....@ 4.95	....@ 5.25	....@....	....@ 4.60	....@....	....@....	....@ 4.00	....@....

	Seattle (98's)	S. Francisco	Standard patent—	Seattle	San Francisco
Family patent	$7.35@7.50	$8.60@8.80	Dakota	$7.25@ 7.40	$6.50@ 6.70
Soft winter straight	5.75@5.95	....@....	Montana	6.85@ 7.00	6.00@ 6.20
Pastry	5.80@5.90	5.40@5.60			

	Toronto	**Winnipeg
Spring top patent‖	$....@5.25	$....@5.30
Spring second pat.‖	....@4.50	....@4.80
Spring first clear‖	....@3.40	....@....

	Toronto	**Winnipeg
Spring exports‖	28s 9d	....
Ont. 90% patents‡	$5.25@5.35	....

*Includes near-by straights. †Nashville prices basis f.o.b. Ohio River points for soft winter wheat flour. **In cottons, Fort William basis. ‖98-lb jutes. ‡Second-hand jutes. §140-lb jutes. ‖Tuesday prices.

ably. Prices unchanged. Quotations, March 6: spring high glutens $7.10@7.25, short patents $6.85@7.05, standard patents $6.70@6.85, first clears $6.35@6.55; southwestern short patents $6.70@6.85, standard patents $6.50@6.70, Texas short patents $6.85@7.05, standard patents $6.70@6.85, soft winter patents $6.40@6.70, straights $6.20@6.40, clears $5.95@6.20.

Baltimore: Quotations steady as demand shows little change; receipts, 21,159 bbls, a decrease of 6,668 bbls from last week. Quotations, March 7: spring first patent $6.90@7.15, standard $6.65@6.85, hard winter short patent $6.55@6.75, 95% $6.35@6.60, soft winter short patent $6.70@7.40, straight $5.30@5.65.

Philadelphia: General undertone of the market steady, aside from near-by soft winter, which is firmer, prices advancing 5@10c bbl. With fluctuations in grain within narrow limits, buyers in most cases are satisfied to go along limiting purchases to small lots to take care of current requirements. There is little or no disposition to operate ahead of well assured wants. Quotations, March 7: spring wheat short patent $6.70@6.90 bbl, standard patent $6.60@6.70, first spring clear $6.15@6.25, hard winter short patent $6.45@6.65, 95% $6.30@6.45, soft winter straights $5.65@6.

Pittsburgh: Demand held to small lots; prices 5c bbl higher; general trend of market somewhat irregular. Very little new buying. Shipping directions materially improved. Family flour demand continues active. Excellent demand for bakers' products, especially in larger industrial sections. Sales held to small lots of spring wheat and hard winters. Some larger consumers awaiting action at Washington before making any large size commitments. Demand for soft winters fair; large lots of clears found ready sale. Quotations, March 7: spring short patent $6.90@7.15, standard patent $6.65@6.85, hard winter short patent $6.45@6.60, standard patent $6.35@6.50, low protein hard winter standard patent $6.30@6.40, spring clears $6.35@6.60, soft winters $5.20@5.35, bulk.

THE SOUTH

New Orleans: Practically stagnant; a few sales of resale flour for immediate shipment at considerable discount in current market prices. As usual southwestern hard wheats were in best demand, principally from bread bakers and jobbers. Other types quiet. Shipping directions and deliveries very good. Bread and cake production normal. Prices unchanged.

Quotations, March 7: hard spring wheat family patent $7.25@7.55, first patent $7.05@7.25, standard patent $6.75@6.95, fancy clear $6.20@6.45, first clear $5.95@6.15, second clear $5.35@5.75; hard winter wheat family patent $6.35@6.60, bakers short patent $6.10@6.35, 95% $5.90@6.10, first clear $4.95@5.55, second clear $4.55@5.85; soft wheat short patent $6.65@7.25, straight $5.90@6.25, first clear $5@5.35.

Atlanta: Clouds continue to hang over new business. Trading with blenders very dull, causing interest in soft wheat 95%, short patents and clears to be just about nil. Movement to them just fair. Sales of family flour to wholesale dealers slow. Many pretty well covered, but those who are not show no interest in booking. Deliveries slow to fairly good; bakers buying only small amounts, feeling no incentive to purchase on long time basis. Majority remain covered through contracts from which they are drawing in fair to good manner. Prices just about steady.

Quotations, March 7: spring wheat bakers short patent $6.85@7.15, standard patent $6.75@6.95, straight $6.65@6.85, first bakery clear $6.45@6.65, hard winter wheat family short patent $7.40@7.45, fancy patent $7@7.05, standard patent $7@7.05, special or low grade $6.60@6.65, 95% $6.75@6.80, bakery short patent $6.45@6.65, standard patent $6.35@6.55, straight $6.25@6.45, first bakery clear $5.95, low protein 95% $6.10@6.20, bulk; first clear $5.10@5.20, bulk; second clear $4.30@4.85, bulk; soft wheat family short patent $7.55@7.75, fancy patent $7.15@7.45, standard patent $7.15@7.45, special or low grade $6.75@6.95, 95% $6.80@6.90; soft wheat short patent, bulk basis $6.10@6.45; soft wheat 95% $5.85@6.20, bulk; straight $5.75@6.10, bulk; fancy cut-off $5.35@5.45, bulk; first clear $5.05@5.20, bulk; second clear $4.80@5, bulk; Pacific Coast soft wheat 95% $6.20, bulk; hard wheat low protein 95% $6, bulk, both all-rail f.o.b. Atlanta; self-rising family flour quoted 25c higher.

Nashville: New business practically at a standstill, buyers not interested in new purchases at any price. Floor stocks and contracts are in pretty good shape, as the majority of buyers overbought in January and their outbound business has been pretty slow. Merchants, jobbers and retailers in the South and Southeast, like all other buyers, are confused over present conditions. Bakers, as a rule, are content to order out against their contracts, and their new purchases are limited to an occasional lot of special grades. Their sales have held up well for this season. Shipping directions very slow in some instances and fair in others. Prices about unchanged from last week.

Quotations, March 7: soft winter wheat short patent $6.75@7.45, standard patent $6.45@6.75, fancy patent $6.15@6.45, clears $5.85@6.15, hard winter wheat short patent $6.40@6.85, standard patent $6.10@6.40, spring wheat short patent $6.85@7.45, standard patent $6.55@6.85.

PACIFIC COAST

Seattle: Market stays very quiet and very little business reported. Wholesalers and jobbers still well stocked and with flour moving so slow in retail trade they are not buying. The large government order of three weeks ago is now practically cleaned up so mills are now sharply curtailing production. Interior mills still doing a fair all-rail business with the Middle West and Southwest. Quotations, f.o.b. Seattle or Tacoma, March 7: family patent $7.35@7.50, bluestem $7@7.25, straight soft white $5.75@5.95, pastry $5.80@5.90, Dakota $7.25@7.40, Montana $6.85@7.

Portland: New bookings light. Columbia River mills busy grinding on huge flour order placed 10 days ago. Puget Sound mills now through with export grindings and confined to domestic flour trade. Interior mills faring slightly better, with some rail business to Southeast, while a few have gotten in on recent export orders. Consequently, they are grinding at greater capacity than coast mills. Domestic bookings slow. Larger buyers booked well ahead, leaving only smaller buyers in market for limited requirements. Back orders now fairly well cleaned up in South and Central American trade and greater interest anticipated from there. Space has been more free for these shipments, and heavier call expected. Quotations, March 7: export straights $4.45@4.65, soft wheat straights $4.70@4.80, Kansas common points; f.o.b. mill, all Montana $6.35@6.55; bluestem bakers, unbleached $6.30@6.50; bluestem bakers $6.05@6.25, Big Bend Bluestem $6.05@6.25, cake $7.95@8.15, pastry $5.20@5.40, pie $5.20@5.40, fancy hard wheat clears $6@6.20; whole wheat, 100% $5.85@6.05, graham $5.40@5.60, cracked wheat $5.40@5.60.

San Francisco: Prices tended easier, but business continues very slow and interest light; deliveries fair. Quotations, March 7: eastern family patents $8.80@9, California family patents $8.60@8.80, Oregon-Washington bluestem blends $6.20@6.40, northern hard wheat patents $6.10@6.30, pastry $5.40@5.60, Dakota standard patents $6.50@6.70, Idaho hard wheat patents $6.20@6.40, Montana spring wheat patents $6.30@6.50, Montana standard patents $6@6.20, California bluestem patents $5.75@5.80, California pastry $5.30@5.50.

CANADIAN MARKETS

Toronto-Montreal: Spring wheat flour domestic business moderate. Demand not affected by the government's proposal to increase by 20c bu initial price of western wheat in 1942-43 season. New bill was introduced into Parliament at end of the week and caused a great deal of confusion in trade. Lists unchanged. Quotations, March 7: top patents $5.25 bbl, seconds $4.50, bakers $4.30, in 98's, jute, car lots, net cash, track, Toronto-Montreal territory.

Export trade in spring wheat flour good. Some new business of substantial quantity worked to British West Indies. British Ministry of Food inquiring for flour at end or week and offered 28s 3d. Mill offers went back at 28s 9d. Indications quite a lot of flour will be wanted for U. K. account from now on. Various war zones all need larger quantities. Increased amounts of Canadian flour are also being sold to Newfoundland. Asking prices up 9d since week ago. Quotations, March 7: vitaminized flour for shipment to United Kingdom 28s 9d per 280 lbs, jute, f.o.b. March seaboard, 29s April.

Ontario winter wheat flour sales extremely light. Wheat hard to get and offerings of flour at low point. Scarcity of shipping makes exports impossible. Prices advanced 5@15c bu. Quotations, March 7: Ontario winter wheat flour $5.25@5.35 bbl, in second-hand jute bags, Montreal; no quotation for export is available.

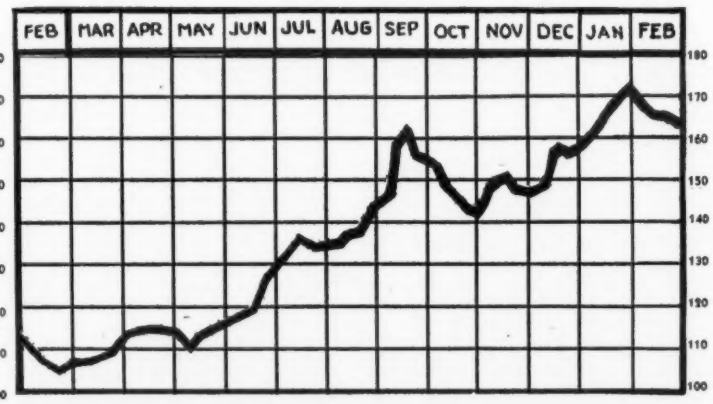
Winnipeg: Trade appeared small last week, with all business apparently on a domestic basis. Toward the close of the week trade faded badly as uncertainties developed in the milling industry when details of the government's wheat policy became known. No indication of any accumulation of supplies in western mills. Prices remained unchanged. Quotations, March 7: top patent springs for delivery between Fort William and the British Columbia boundary, $5.30, cottons; seconds, $4.80; second patents to bakers, $4.60.

Vancouver: Another week has passed without western Canadian flour millers finding a new outlet for their export production. The freight situation around the Pacific is still very serious despite high bids offered for any kind of space. No change has taken place in domestic hard wheat flour prices for a month since quotations were dropped back to the ceiling level. Demand is reported to be holding up fairly well, with supplies moving out to lumber camps and new construction projects in fairly large amounts. With the advent of spring and the increase in the number of new army and air force bases along the coast, still further business may be expected, dealers state. Quotations on a cash car basis for 98's, cottons, are $5.40 for first patents and $5 for bakers patents. Ontario pastry flour is in fair supply at $7.60.

FEED PRICE MOVEMENT THE PAST YEAR

1935-36=100

A Weighted Average of Principal Feedstuffs as Determined by the Bureau of Agricultural Economics



The index of wholesale feedstuffs prices for the country as a whole stood at 164.7 last week, compared with 164.8 a week earlier and 106.8 a year ago. The average index for February was 166.0, compared with 167.1 for January. Feed prices, therefore, averaged lower in February than in January, while feed grains averaged higher. Based on middle of the month prices, corn was worth $27.35 ton at the farm in February, compared with $26 in January, while oats were bringing $32.50 at the middle of February, compared with $31.38 ton in January.

MILLFEED MARKETS

Quotations Tuesday, March 10

Minneapolis: Spot supplies extremely scarce throughout Northwest, due to light operation of mills; bran virtually unobtainable in any quantity; this grade now quoted at premium of 50c over std. midds. Mills generally having difficulty getting enough to take care of mixed car business, which is unusually heavy. General inquiry from distributors and mixers light, however; bran here $34, std. midds. $33.50, flour midds. $34, red dog $34.50.

Kansas City: Fair; trend steady; supply adequate; bran $32.25@32.50, gray shorts $34@34.50.

Oklahoma City: Fair demand, particularly on bran; prices advanced $2 on all classes; bran $1.75@1.80 per bag of 100 lbs, mill run $1.80@1.85, shorts $1.85@1.90.

Omaha: Demand moderate to slow; offerings light; prices up; bran $32.75@33.50, brown shorts $34, gray shorts $34.50@35, red dog $37.50.

Wichita: Good; supplies limited to orders booked ahead; prices $1@1.50 higher; bran $32.75@33, shorts $33@34.20.

Hutchinson: Good; trend stronger; supply inadequate; bran $32.50, mill run $33.25, gray shorts $34 (Kansas City basis).

Salina: Good; trend higher; supply of bran about equal to trade needs, but shorts continue scarce; basis Kansas City: std. bran $32.75@33.25, gray shorts $34@34.50.

Fort Worth: Good; trend higher; supply about balances the demand; wheat bran $35@35.60, gray shorts $38.40@39, white shorts $40@41, car lots, del. Texas common points or Galveston domestic rate.

Chicago: Improved, fairly active; trend firmer; supply moderate; spring and hard winter bran $35.50, std. midds. $35.50@35.75, flour midds. $36, red dog $36@36.50.

St. Louis: Bran $35.25@35.50, pure bran $35.50@35.75, gray shorts $36.25@36.50, brown shorts $35.75@36, red dog $37.50.

Toledo: Advancing; now practically recovered all lost ground and at or near top levels of crop; soft winter wheat bran $36.50, mixed feed $36.25, flour midds. $36, std. $36.

Cincinnati: Demand slow with the prices higher; supply tight, with mills not operating; bran $38.50, red dog $40, gray shorts $38.50@39, brown $38.

Buffalo: Trade slackened demand, awaiting action on pending legislation on relationship between market prices and parity for agricultural products; trend steady to firm; while demand was somewhat light, it exceeded supply for near-by shipment, resulting in sharp upturn in prices; bran $38, std. midds. $37, flour midds. $36.50, second clear $39.50, red dog $36, heavy mixed feeds $37.

New York: Quiet; trend steady; supply ample; bran $39.60, std. midds. $39.60, flour midds. $39.60, red dog $39.10.

Baltimore: Good; trend strong; supply light; std. bran $37.75, pure soft winter bran $38, std. midds. $37.50, flour midds. $37, red dog $37.

Boston: Brisk demand reported; prices moved upward as inquiries increased and situation changed quickly from a buyers' to a sellers' market. Offerings tight. Buffalo quoted midds. 50c below West, while

bran prices were the same. No Canadian offerings reported. Domestic prices $2 higher for bran and $1.25 for midds; standard bran $42.50@43.50, std. midds. $41.25@41.75, flour midds. $42.25@42.75, red dog $40.

Philadelphia: Moderate; trend stronger; supply light; bran, std. $41@41.50, pure spring $41.50@42, hard winter $41.50@42, soft winter nominal; midds., std. $40.50@41, flour $39@39.50, red dog $39@39.50.

Pittsburgh: Brisk; trend steady; supply adequate; spring bran $39.90, red dog $40.65.

Atlanta: Fair; trend unsteady; supply ample; occasional small lot of Argentine feeds comes into New Orleans, but amounts not sufficient to seriously affect demand there for domestic feeds; bran $40.80@41.50, gray shorts $42@43, std. midds. $43@43.75, rye midds. $37.75@38.25, red dog $43@46.

Nashville: Demand fairly good; supply ample; prices about steady; bran $36.50@37, std. midds. $37@38, gray shorts $38@38.50.

Seattle: Slow; trend easier; supply ample; $30.50@31.50.

Portland: Std. mill run $33.50, bran $34.50, shorts $35.50, midds. $38@38.50.

Ogden: Business static, with little new, although shipping directions active; mills operating at capacity five days a week; government grain purchases still affecting trade. Quotations stationary. To Utah and Idaho dealers: red bran and mill run $32.50, blended $32.50, white $33, midds. $39, carload lots, f.o.b. Ogden. Denver prices: red bran and mill run $37.50, blended $37.50, white $38, midds. $44. California prices: red bran and mill run $39.50, blended $39.50, white $40, midds. $46, car lots, f.o.b. Los Angeles. Millfeed prices for San Francisco shipments quoted 50c under Los Angeles.

San Francisco: Market weaker, with demand improved and offerings heavier; trade stocks low, with majority buyers very bearish; Kansas bran, $38.50@41; Utah-Idaho: red mill run $37.50@38, blended $38@38.50, white $38.50@39; Oregon-Washington: red mill run $36.50@37, std. $36.50@37, white $37@37.50, white bran $40@40.50, midds. $40.50@41, shorts $39.50@40; Montana: bran and mill run $39@39.50; California: blended mill run $37@37.50, white $37.50@38.

Los Angeles: Fair; trend steady; supply fair; Kansas bran $41, local midds. $45, local mill run $38.

Toronto: Trend steady; demand strong; mills selling only in mixed cars and no car lots to be had; buyers so eager to get feed that they sometimes buy flour which they do not need; only limited quantities permitted to go for export, on which price is $8@9 ton over domestic level. To arrive at domestic values to buyers deduct $4.50 ton, amount of freight subsidy, from following prices: bran $29, shorts $30, midds. $33 ton, net cash, bags included, mixed or straight cars, track, Montreal freights.

Winnipeg: Demand good, with supplies moving freely; some stocks apparently being diverted to United States feeding interests under export permits; remainder of supplies going to eastern Canada; no improvement in western sales, but some Alberta stocks going into British Columbia; bran $28, shorts $29, Man. and Sask; Alta. bran $25.50, shorts $26.50; small lots ex-country elevators and warehouses, $3 extra.

Vancouver: Mills are inclined to seek bids on shorts, but bran is rather on the short side; only small quantities of midds. are being used here, so that the question of supplies is not important; domestic demand continues very good and local stocks are scant following the recent good demand. With the scarcity of bran it is difficult for dealers to maintain stocks on the floor. Prices are unchanged at the price ceiling level set by the Wartime Prices and Trade Board; bran $29.80, shorts $30.80 and midds. $33.80.

GRAIN FUTURES—CLOSING PRICES

Closing prices of grain futures at leading option markets, in cents per bushel:

WHEAT

	Minneapolis		Chicago		Kansas City		St. Louis		Duluth	
	May	July	May	July	May	July	May	July	May	July
March 4	123¼	125⅛	129⅛	130⅞	122⅝	123⅝	....	....	120¼	120⅝
March 5	123⅛	125¼	129⅝	131¼	122⅝	124	....	....	120½	121
March 6	123	124⅞	129½	131⅛	122⅝	123⅛	....	....	120	120½
March 7	122¼	124⅛	129¼	130⅞	122⅜	123⅜	....	....	119¼	119⅝
March 9	121⅛	123¼	127⅞	129½	120¾	122¼	....	....	118	118¼
March 10	121⅜	123⅝	128¼	129¾	121¼	122⅝	....	....	118¾	118¾

	Portland		Seattle		Winnipeg		Liverpool		Buenos Aires	
	May	July	May	July	May	July	Closed		Closed	
March 4	103½	....	103	..	79⅝	80⅛	....	....	....	....
March 5	103¼	....	103	105	79¼	80⅜	....	....	....	....
March 6	103¼	....	103	105	79¼	80⅜	....	....	....	....
March 7	103¼	....	103	105	79¼	80⅜	....	....	....	....
March 9	....	....	....	..	79⅛	80¼	....	....	....	....
March 10	....	....	....	..	79⅛	80⅜	....	....	....	....

	CORN						OATS			
	Minneapolis		Chicago		Kansas City		Chicago		Minneapolis	
	May	July	May	July	May	July	May	July	May	July
March 4	80⅝	....	87½	89⅜	82¾	84⅝	56½	56	53	52⅝
March 5	81⅛	....	88	90¼	83⅜	85¼	56⅝	56	53¼	52½
March 6	81⅛	....	88	90¼	83⅛	85	56¼	55⅝	52½	51⅞
March 7	81¼	....	88¼	90½	83⅜	85¼	55⅞	55⅜	52	51½
March 9	80⅝	....	87⅝	89¾	82½	84½	55¼	54⅝	51¼	51
March 10	81	....	88⅛	90⅝	83¼	85⅛	55¼	54⅞	51⅜	51⅛

	RYE				FLAXSEED				BARLEY	
	Chicago		Minneapolis		Minneapolis		Duluth		Minneapolis	
	May	July	May	July	May	July	May	July	May	July
March 4	85⅜	88¼	81¼	83⅜	235¼	236⅜	235¼	....	63½	65½
March 5	85⅝	88⅜	81¼	83⅝	237¼	238⅜	237¼	....	63½	65½
March 6	85⅝	88¼	81	83¼	241½	243	241½	....	62½	64½
March 7	85½	88¼	80¾	83⅛	245½	246¾	245½	....	62	64
March 9	84⅝	87	79¾	82⅛	243⅛	245½	243½	....	61	63
March 10	84⅜	87¼	80⅛	82⅜	246½	248	246½	....	60½	62½

UNITED STATES VISIBLE GRAIN SUPPLY

Visible supply of grain in the United States, as compiled by the secretary of the Chicago Board of Trade, in bushels (000's omitted), of date Feb. 28, and corresponding date of a year ago:

	Wheat		Corn		Oats		Rye		Barley	
	1942	1941	1942	1941	1942	1941	1942	1941	1942	1941
Baltimore	7,532	294	668	669	16	17	116	87	4	2
Buffalo	7,129	3,847	9,266	741	527	586	2,959	251	284	394
Afloat	2,215	2,718	..	..	..	..	..	..	202	45
Chicago	13,300	10,029	12,016	13,823	2,122	711	3,364	1,607	351	548
Afloat	353	283	187	..	..	..	1,689	..	..	..
Detroit	160	95	2	2	4	4	2	2	190	190
Duluth	32,880	18,771	5,015	2,722	354	194	1,540	651	1,127	275
Fort Worth	10,751	8,225	618	819	95	114	22	1	110	20
Galveston	5,076	941	..	80	..	..	..	..	..	..
Hutchinson	9,236	7,136	..	..	..	..	..	..	..	..
Indianapolis	1,486	1,668	2,079	1,190	295	383	132	128	..	..
Kansas City	34,152	27,793	5,753	7,879	245	72	416	328	299	4
Milwaukee	2,742	566	1,637	3,732	219	19	818	276	1,006	1,172
Afloat	..	..	..	..	..	..	479	..	..	..
Minneapolis	38,329	25,023	3,724	10,360	1,254	1,098	4,840	1,622	4,135	3,392
New Orleans	1,776	60	85	351	49	140	..	1	..	..
New York	528	24	296	14	39	9	38	39	..	..
Afloat	..	..	51	..	..	..	..	..	..	..
Omaha	13,300	6,814	7,751	13,661	397	26	235	3	350	3
Peoria	1,052	790	392	681	..	..	..	..	156	152
Philadelphia	2,056	89	512	136	12	11	10	1	1	..
St. Louis	5,429	6,038	3,365	1,320	251	152	422	8	26	4
Sioux City	1,660	743	1,581	1,638	108	37	..	..	16	11
St. Joseph	5,930	3,844	765	2,753	204	126	8	8	17	10
Wichita	7,121	3,824	5	..	2	..	..	..	32	..
Totals	204,193	129,615	55,770	62,571	6,193	3,699	17,090	5,013	8,306	6,222

SUMMARY OF MILLFEED QUOTATIONS

Week-end millfeed quotations, summarized from the market reviews, are based on carlead lots, prompt delivery, per ton, packed in 100-lb sacks, f.o.b. at indicated points:

	Chicago	‡Minneapolis	Kansas City	St. Louis	Buffalo
Spring bran	$....@35.50	$....@34.00	$....@....	$....@....	$....@38.00
Hard winter bran	....@35.50	....@....	32.25@32.50	35.25@35.50	....@....
Standard middlings*	35.50@35.75	....@33.50	....@....	35.75@36.00	....@37.00
Flour middlings†	....@36.00	....@34.00	34.00@34.50	36.25@36.50	....@36.50
Red dog	36.00@36.50	....@34.50	....@....	....@37.50	....@36.00

	Baltimore	Philadelphia	Boston	Cincinnati	Nashville
Spring bran	$....@37.75	$41.00@41.50	$42.50@43.50	$....@....	$....@....
Hard winter bran	....@....	41.50@42.00	....@....	....@....	....@....
Soft winter bran	....@38.00	....@....	42.50@43.50	....@38.50	36.50@37.00
Standard middlings*	....@37.50	40.50@41.00	41.25@41.75	....@38.00	37.00@38.00
Flour middlings†	....@37.00	39.00@39.50	42.25@42.75	38.50@39.00	38.00@38.50
Red dog	....@37.00	39.00@39.50	....@40.00	....@40.00	....@....

	Spring bran	Shorts	Middlings
Toronto	$....@29.00	$....@30.00	$....@33.00
¶Winnipeg	....@28.00	....@29.00	....@....

*Brown shorts. †Gray shorts. ¶Fort William basis. ‡Tuesday prices.

RYE PRODUCTS

Minneapolis and Interior Minnesota: General price readjustment; current quotations are 35c bbl down from high level of week ago; this, however, has not brought in any new business of importance. Trade showing more interest and shopping for bargains; directions only fair; pure white rye flour $4.50@4.90 bbl, in 98-lb cottons, f.o.b. Minneapolis, pure medium $4.30@4.70, pure dark $3.70@4.20.

Chicago: Another very quiet week, with only scattered small sales reported; directions slow; white patent $4.75@5.25, medium $4.55@5.05, dark $3.70@4.40.

Pittsburgh: Demand limited; trend unchanged; supply ample; pure white rye flour $5.50@5.75, medium $5.20@5.35, dark $4.40@4.65.

Philadelphia: Market quiet and without important change; offerings moderate but ample; white patent, $5.20@5.40.

Cincinnati: Demand only fair, with the trend steady; white $4.50@4.75, medium $4.25@4.50, dark $4.

Baltimore: Rye flour and No. 2 rye steady; demand little changed; rye flour, dark to white $4.60@5.30 bbl; No. 2 rye, 85@90c bu; rye stock in local elevators decreased 3,463 bus during the week to a total of 116,094 bus.

St. Louis: Prices unchanged; sales and shipping directions fair; pure white flour $5.65 bbl, medium $5.45, dark $4.95, rye meal $5.25.

New York: Lacks incentive for sales as buyer interest is at a minimum; pure white patents $5.15@5.65.

Portland: Pure dark rye $5.40@5.50, medium dark rye $5.45@5.55, Wisconsin pure straight $6.40@6.50, Wisconsin white patent $6.65@6.75.

Buffalo: Light; trend steady; supply ample; dark $5.25, medium $5.75, white $5.95.

OATMEAL MARKETS

Toronto-Montreal: Rolled oats and oatmeal inclined to be slow; no special reason given for slackening demand except general quietness in most cereal products; price unchanged. Quotations, March 7: rolled oats $3.25 per 80-lb bag, delivered, mixed cars, Toronto-Montreal.

Winnipeg: Domestic trade continues fairly good, but still no indication of new export business to United Kingdom or other over-sea buyers; stocks moderate. Quotations, March 7: rolled oats, in 80-lb sacks, $3.25 in the three prairie provinces; oatmeal, in 98-lb sacks, 20% over rolled oats.

Minneapolis: Rolled oats were quoted on March 9 at $3.70 per 90 lbs, bulk; 20-oz packages $2.20 case; 48-oz packages, $2.35.

Rye Flour Output

Following is the rye flour output reported to The Northwestern Miller by mills at Chicago, Minneapolis and outside points in the Northwest, in barrels, with comparative figures for the previous week:

	Week ending Feb. 28	Week ending March 7
Five mills	15,837	14,988

A 1942

LIST of FLOUR MILLS

IN THE UNITED STATES AND CANADA

IS AVAILABLE!

Subscribers to The Northwestern Miller are mailed a copy of this new list on request, without charge.

Use the attached subscription order blank to get the new list, and to receive The Northwestern Miller weekly, if you are not now a subscriber:

THE NORTHWESTERN MILLER,
Subscription Department,
118 South Sixth Street, Minneapolis, Minn.

Please enter my subscription to The Northwestern Miller and mail a copy of the 1942 List of Flour Mills to me.

Name .....

Address .....

.....

SUBSCRIPTION RATES
Including List of Mills
One Year.....$2.00 Three Years.....$5.00

WANT ADS

Advertisements in this department are 5c per word; minimum charge, $1. (Count six words for signature.) Situation Wanted advertisements will be accepted for 2½c per word, 50c minimum. Display Want Ads $4 per inch per insertion. All Want Ads cash with order.

HELP WANTED

SECOND MILLER FOR LARGE SPRING wheat and rye mill; prefer married man, not over 40. Give complete information as to age, experience, etc., also salary expected in first letter. Address 5502, The Northwestern Miller, Minneapolis, Minn.

FOOD CHEMIST WANTED FOR BAKERY products control laboratory; applicant must have college degree in chemistry and several years' experience in general food chemistry; should have ability to supervice laboratory work and analyze flour, shortening, milk, eggs and other products used by a bakery. Apply by written application only, giving personal and technical qualifications, experience, draft status, age, references, recent photograph and salary desired. Application will be treated in strict confidence. The Great Atlantic & Pacific Tea Co., National Bakery Division, 420 Lexington Av, New York, N. Y.

SITUATIONS WANTED

SCALE MECHANIC, EXPERIENCED ON the installation and maintenance of all type beam and automatic scales, now employed, wishes to make change; can furnish best of references. Address 5500, The Northwestern Miller, Minneapolis, Minn.

HEAD MILLER-SUPERINTENDENT IN mill, 300 bbls up, or consider second miller job in large mill; years' experience in hard and soft wheat good mills; references on request; age 47. Address 5503, The Northwestern Miller, 614 Board of Trade, Kansas City, Mo.

DO YOU HAVE AN OPENING FOR A young, capable milling superintendent? Now employed; married, well settled; lifetime experience; operated both hard and soft wheat plants; fair millwright; excellent references. Address 5501, The Northwestern Miller, Minneapolis, Minn.

MACHINERY FOR SALE

ONE SINGLE TUBE BETA CHLORINE machine; 1—Novadel feeder; 1—Forster bran finisher; 1—Wallace & Tiernan two-tube Agene machine; 1—Nordyke & Marmon bran packer; 1—Nordyke & Marmon standard flour packer; 1—No. 100 Niagara grade maker; 1—No. 160 galvanized Gump chemical feeder. All this machinery is practically like new, located at Clyde, Ohio. F. W. Mann, 1030 N. Sixth St., St. Louis, Mo.

MACHINERY WANTED

WANTED—BRIGHTWOOD BOX MACHINE —Pneumatic scale packaging machine; two flour blenders. Address 4970, The Northwestern Miller, Minneapolis, Minn.

BUSINESS OPPORTUNITIES

FOR SALE—MILL AND MACHINERY; Niagara Falls mill, 1,000-bbl capacity, fully equipped; as a mill 20c on dollar; machinery alone ⅓ of list. P. E. McGuire, 912 Humboldt, Buffalo, N. Y.

FOOD RESEARCH LABORATORIES, Inc.

Consultation and Research on

VITAMINS

Assays of Enriched Flour, Bread, etc.

P. B. Hawk, Ph. D., Pres.
B. L. Oser, Ph. D., Dir.
D. Melnick, Ph. D., Ch. Chem.

43-14 Thirty-third Street
LONG ISLAND CITY, N. Y.

Biological, Chemical, Fluorometric and Microbiological Methods

CANNON VALLEY

is manufacturing one of the outstanding flours made in Minnesota. A perfect flour, laboratory controlled. Many of our old customers and some of our new connections have written us voluntarily that they have never had so many favorable comments. We can please the most exacting.

CANNON VALLEY MILLING CO.
Chamber of Commerce
Minneapolis

Leading Patents
VANITY FAIR
TELEPHONE
MARITIME
} Laboratory Controlled

Red River Milling Company
FERGUS FALLS, MINNESOTA
Montana and North Dakota Wheat used exclusively
Daily Capacity, 1,000 Barrels
"CERES" Highest Quality Hard Spring Wheat Flour
"No. A1" Highest Quality Hard Spring Wheat Flour
DISTRICT SALES OFFICE:
510 Hodgson Building, MINNEAPOLIS

DIXIE LILY
A flour without an equal anywhere
Plain and Selfrising
THE BUHLER MILL & ELEVATOR CO.
BUHLER, KANSAS

Lyon & Greenleaf Co.
MILLERS OF
High Grade Soft Winter Wheat Flour
LIGONIER, IND.
WAUSEON, OHIO NORFOLK, VA.

"Sasnak Flour"
For Discriminating Eastern Buyers
ENNS MILLING CO., Inman, Kan.

Chickasha Milling Co.
Capacity 800 bbls
CHICKASHA OKLA.
Cable Address "Washita"
Manufacturers of High-Grade Hard Wheat Flour
Foreign and Domestic Trade Solicited
Member Millers' National Federation

The Moundridge Milling Co.
Operating Mills in Kansas and Missouri
BAKERY FLOUR - CRACKER FLOUR
FAMILY FLOUR
General Offices: MOUNDRIDGE, KANSAS

Flour and Grain Receipts and Shipments

Receipts and shipments of flour and grain at the principal distributing centers for the week ending March 7, as compiled by the Daily Trade Bulletin‡, flour given in barrels, grain in bushels (000's omitted throughout):

RECEIPTS

	Flour	Wheat	Corn	Oats	Rye
Chicago	265	128	1,841	392	81
Duluth	..	621	96	..	18
Indianapolis	..	88	704	164	5
Kansas City	..	901	612	50	..
Milwaukee	17	..	218	5	15
Minneapolis	..	1,924	574	741	125
Omaha	..	94	558	58	..
Peoria	41	25	975	20	25
Sioux City	..	26	99	28	8
St. Joseph	..	85	135	126	..
St. Louis	124	213	514	110	26
Wichita	..	215	..	..	..
Totals	447	4,320	6,326	1,694	303
Seaboard—					
Baltimore	22	52	39	29	10
Boston	14	..	..	..	..
Galveston	..	14	..	..	..
New York	115	153	..	4	..
New Orleans	19	..	57	14	..
Philadelphia	27	..	21	..	..
Totals	197	*219	117	47	10
Grand totals	644	4,539	6,443	1,741	313
Last week	670	4,017	6,354	1,108	465
Last year	670	2,467	4,304	1,000	174

*193,000 bus bonded.

SHIPMENTS

Primary points—					
Chicago	108	413	1,433	439	33
Duluth	..	306	2	..	1
Indianapolis	..	27	295	80	5
Kansas City	128	546	458	24	..
Milwaukee	6	..	42	12	73
Minneapolis	147	656	347	497	65
Omaha	..	220	663	68	..
Peoria	35	54	443	12	..
Sioux City	..	31	114	8	..
St. Joseph	..	68	58	26	..
St. Louis	101	195	274	80	6
Wichita	..	177	..	..	..
Totals	525	2,693	4,129	1,246	183
Seaboard—					
New York	..	296	..	..	..
Totals	..	*296	..	..	..
Grand totals	525	2,989	4,129	1,246	183
Last week	462	2,488	3,200	1,013	272
Last year	531	2,921	2,119	763	161

*Bonded. ‡Some allowance should be made for duplication.

Western Canada Visible Grain Supply

Visible supply of grain in the western inspection division March 6, 1942, and receipts and shipments during the past week, in bushels (000's omitted):

Fort William and Port Arthur—	Wheat	Durum	Oats	Barley
Semi-public terminals	124,852	721	2,038	3,582
Private terminals	..	..	46	6
Winter storage—				
Afloat	1,726	..	..	..
Totals	126,579	721	2,084	3,588
Vancouver-New Westminster	18,097	..	126	55
Int. public and semi-public elevators	17,619	..	57	71
Churchill	2,617	..	..	..
Victoria	1,023	..	..	..
Prince Rupert	1,206	..	..	..
Totals	167,145	721	2,267	3,714
Year ago	129,171	1,412	1,635	770
Receipts during week—				
Ft. Wm.-Pt. Ar.	2,317	31	365	122
Pacific seaboard	52	..	5	2
Int. public and semi-public elevators	16	..	9	7
Totals	2,385	31	379	131
Shipments during week—				
Ft. Wm.-Pt. Arthur—				
Rail	339	8	290	222
Int. public and semi-public elevators	4	..	..	..
Pacific seaboard	62	..	3	2
Totals	404	8	293	224

TOTAL RECEIPTS
Aug. 1, 1941-March 6, 1942

Ft. Wm.-Pt. Ar.	150,480	1,524	13,118	15,840
Pacific seaboard	1,812	..	244	96
Int. public and semi-public elevators	393	..	152	109

TOTAL SHIPMENTS
Aug. 1, 1941-March 6, 1942

Ft. Wm.-Pt. Ar.	105,726	1,454	13,888	13,372
Pacific seaboard	1,217	..	137	61
Int. public and semi-public elevators	2,728	1	84	35

Millfeed Futures Open Interest

Following table shows open contracts at Kansas City and St. Louis on March 9, in tons. This is the short side of contracts only, there being an equal number of tons open on the long side.

	Kansas City Bran	Kansas City Shorts	St. Louis Shorts	*St. Louis Bran	*St. Louis Midds.
March	6,250	3,650	600	1,875	400
April	8,400	4,200	600	3,700	600
May	3,425	2,600	400	6,100	650
June	5,000	1,400	..	6,350	500
July	100	200	..	200	..
August	..	..	..	400	..
Totals	23,175	12,050	1,600	18,625	2,150

*Delivered in Chicago.

A New Brand on the Milling Horizon
BIRCHMONT
Typically Minnesota—a short patent that will stand comparison
— and —
WHITE GOLD
(Standard Patent)
ST. CLOUD MILLING CO.
ST. CLOUD, MINNESOTA
300 Bbls Capacity

"Hunter's CREAM"
A Kansas Turkey Wheat Flour
that for more than sixty years has stood at the very top of the fine quality list.
The Hunter Milling Co.
Wellington, Kansas

NEW ULM ROLLER MILL CO.
Red Jacket Patent
Double Seven High Gluten
NEW ULM MINNESOTA

"RUSSELL'S BEST"
"AMERICAN SPECIAL"
Our mill is located in the high protein wheat district of central western Kansas, and secures most of its wheat directly from growers.
RUSSELL MILLING CO., Russell, Kansas

Dependable Hard and Soft Wheat Bakery and Family Flours
SAXONY MILLS
ST. LOUIS, MO.
Our 92nd year

UNIFORM QUALITY FLOURS
PLAIN AND SELF-RISING
Low cost laboratory controlled mill grinding all types of wheat
Pancake Flour—Cake Flour—Farina—Whole Wheat Products—Prepared Biscuit Flour
CHELSEA MILLING CO., Chelsea, Mich.

HIGH GLUTEN FLOURS
For Bakers
The Morrison Milling Co.
Denton, Texas
Emphatically Independent

LITTLE ADS WITH A BIG MESSAGE
READ AND USE NORTHWESTERN MILLER WANT ADS

South Carolina

(Continued from page 12.)

which are harmless and assimilable. The substances referred to in section 1 (a) and 1 (b) may be added in a harmless carrier which does not impair the enriched flour will be permitted until Aug. 1, 1942. or enriched self-rising flour, such carrier is used only in the quantity necessary to effect an intimate and uniform admixture of such substances with the flour.

Sec. 2: All white bread sold, or offered for sale, within the State of South Carolina shall be enriched to contain in each pound, as sold, not less than 1.0 milligram and not more than 2.0 milligrams of Vitamin B_1 (thiamin), not less than 4.0 milligrams and not more than 16.0 milligrams of nicotinic acid (niacin) or nicotinic acid amide (niacin amide), not less than 4.0 milligrams and not more than 16.0 milligrams of iron (Fe).

(a) The enrichment of white bread may be accomplished through the use of enriched flour, enriched yeast, other enriched ingredients, synthetic vitamins, harmless iron salts or by any combination of methods which will produce enriched bread which meets the standards herein defined.

(b) The State Department of Agriculture is empowered with the authority and directed to change, or add to, the specifications for ingredients and the amounts thereof required to conform to the federal definition of enriched bread when promulgated.

Sec. 3: All enriched flour or bread sold in the State of South Carolina must be labeled in accordance with the regulations of the Federal Security Agency, governing enriched flour or enriched bread sold in interstate trade.

Sec. 4: The provisions of this act shall be enforced by the Department of Agriculture, which department is authorized and directed to issue such rules as may be necessary to regulate the manufacture and sale of flour and bread in this state under the provisions of this act. The department or its agent representatives shall have authority to enter upon the premises of any manufacturer of flour or bread, and of any wholesale or retail dealer in flour or bread, for the purpose of inspecting and analyzing flour or bread which may be offered for sale; and any person, firm or corporation found guilty of violating the terms of this act shall be subject to fine for each and every offense, in a sum of not exceeding $100 or by imprisonment not exceeding 30 days.

Sec. 5: The terms of this act need not apply to flour ground for the wheat producer whereby the miller is paid in wheat or feed for the grinding service rendered, except in so far as such a mill may manufacture toll wheat into flour and sell or offer for sale such flour, whereupon this act shall be applicable.

The terms of this act as regards flour shall not apply to flour sold to bakers or other commercial secondary processors provided the purchaser furnishes to the seller an approved certificate of intent to use said flour solely in the production of enriched flour or enriched bread as herein defined or in the manufacture of legitimate products not covered by the provisions of this act.

The terms of this act shall not apply to flour or bread which is made from the entire wheat with no parts of the wheat removed from the mixture. In cases of flour or bread containing mixtures of the whole wheat berry and white flour or mixtures of various portions of the wheat berry, such products shall have a vitamin and mineral potency at least equal to enriched flour or enriched bread as described in Sections 1 and 2 of this act.

Sec. 6: Whenever any person, firm or corporation subject to the provision of this act shall submit to the Commissioner of Agriculture an affidavit claiming a shortage or imminence of shortage of any vitamin or mineral element added to a food as required by this act, the Commissioner shall request information from the War Production Board or other federal agency responsible for information concerning said availability.

If factual information can be obtained within 10 days from said source this information shall be considered as final and the South Carolina Commissioner of Agriculture is hereby instructed to act thereon. However, if said information is not available the Commissioner of Agriculture shall hold a public hearing within 10 days. If in the judgment of the Commissioner, the testimony presented shows that the sale and distribution of a food may be substantially impeded by the enforcement of the provisions of this act, he shall immediately suspend such parts of the act which may impede such sale; provided such suspension shall be revoked as soon as adequate supplies of such vitamins and minerals become available in the judgment of the Commissioner, based on information from said federal agencies or testimony at a public hearing.

Sec. 7: There is hereby appropriated from the general funds of the state the sum of $2,500 or so much thereof as may be necessary, available to the Department of Agriculture, to be used by it in enforcing the provisions of this act during the fiscal year 1942-43.

Sec. 8: All acts or parts of acts inconsistent with the provisions of this act are hereby repealed to the extent of such inconsistency.

Sec. 9: This act shall take effect July 1, 1942; provided, however, that in order to entirely clear the channels of distribution in the State of South Carolina of flour not made in conformity with this act, the sale of such flour by distributors and retailers

Rails to Convert Automobile Box Cars into Grain Haulers

Large scale conversion of railroad cars used for transporting automobiles and automobile parts to box cars suitable for grain and other types of freight will begin shortly. Sufficient cars are expected to be released from automobile service to ease the "tight" situation in grain cars, it was explained.

While some railroad men expect their automobile cars may be tied up another 10 days to two weeks hauling the last part of the automobile shipments, thereafter returning cars will be shunted into the shops for conversion. A fraction of the existing automatic loading cars may be left undisturbed to handle military movements.

As of Dec. 31, 1941, American railroads had a total of 31,185 automobile cars equipped with automatic loading devices. The major part of these are readily convertible into general box or grain cars by removal of interior loading devices and laying new floors. This is said to be a minor job that most railroads can quickly handle in their own shops.

WOULD STORE EQUIPMENT

Such loading equipment would then be stored until passenger automobile production, banned by government order, is resumed. In other cases railroads will suspend automatic automobile loading equipment from the ceiling of the car and make other interior changes to fit them for general loading.

The number of box cars used in automobile service exceeds by a considerable extent those which contain automatic loading devices. As of Dec. 31, 1941, the Association of American Railroads reported there were 123,969 auto-box and auto-furniture cars owned by the railroads. This compares with 607,100 general purpose box cars reported owned on the same date. While the A. A. R.'s figures make no breakdown of the 123,969 total between auto and furniture cars it is understood the auto cars comprise the major part of the total.

Sharply increased volume of grain now being moved by the Commodity Credit Corp. is one reason prompting the quick conversion of automobile cars. John B. Hutson, president of the CCC, said last week that the government agency is having a little difficulty in obtaining grain cars.

While the large grain movement to date is said to have been coming from temporary storage facilities scattered throughout the corn belt, some railroad officials expect a major long haul movement to begin shortly from the Twin Cities to Buffalo, N. Y., and points along the eastern seaboard. Normally this grain would move on the Great Lakes for most of this trip.

In the week ended Jan. 31, 1942, the railroads handled 47,629 cars of grain and grain products, compared with 17,122 in the like 1941 week. In the week of Jan. 24, 1942, the movement was 47,148 cars, against 16,376 in 1941.

——BREAD IS THE STAFF OF LIFE——

Mexico Exports Substantial Amounts of Rice and Corn

WASHINGTON, D. C.—The 1941 rice and corn crops in Mexico were large enough to permit substantial exports during 1942, according to a report to the Department of Agriculture. The rice crop was the largest on record, being estimated at 5,405,000 bus, compared with 5,277,000 bus in 1940. The average crop for the five-year period ending with 1939 was 4,003,000 bus annually.

Mexico has long been a small surplus producer of rice. Exports have been declining because of increased domestic consumption, but it is believed exports during 1942 will be large because of the large crop and carry-over supplies on hand. Some shipments already have been made to Cuba.

The 1941 corn crop is placed at 77,000,000 bus, compared with 65,000,000 bus in 1940. The average crop for the five-year period ending with 1939 was 67,000,000 bus. Domestic requirements amount to about 68,000,000 bus. In view of the 77,000,000-bu crop, it appears that the surplus for export or for carry-over into 1943 will amount to approximately 9,000,000 bus.

——BREAD IS THE STAFF OF LIFE——

TO AVOID CAR SHORTAGE

DULUTH, MINN.—To guard against the possibility of a shortage in railroad cars a local committee of shippers and traffic men soon will be organized here to eliminate holding cars more than 48 hours either in loading or unloading. In the past there has been use of box cars for warehouse or storage purposes on the part of some interests, it was reported.

After all!
"There is No Substitute for Quality"

Wheat Flours
"WINGOLD"
"BAY STATE"
"WINONA"
"WINBAYCO"

Clear
"BOXER"

Flours of Dependable Quality

Rye Flours
WHITE RYE
MEDIUM RYE
DARK RYE
PURE LIGHT RYE
SPECIAL MEDIUM RYE

Rye Meal
COARSE
MEDIUM-FINE

BAY STATE MILLING CO.
HARD SPRING WHEAT & RYE FLOURS
WINONA - MINNESOTA
DAILY CAPACITY: FIVE THOUSAND BARRELS

SPRING WHEAT FLOURS

RED WING SPECIAL
BIXOTA
CREAM of WEST
PRODUCE BREADS WITH TASTE APPEAL

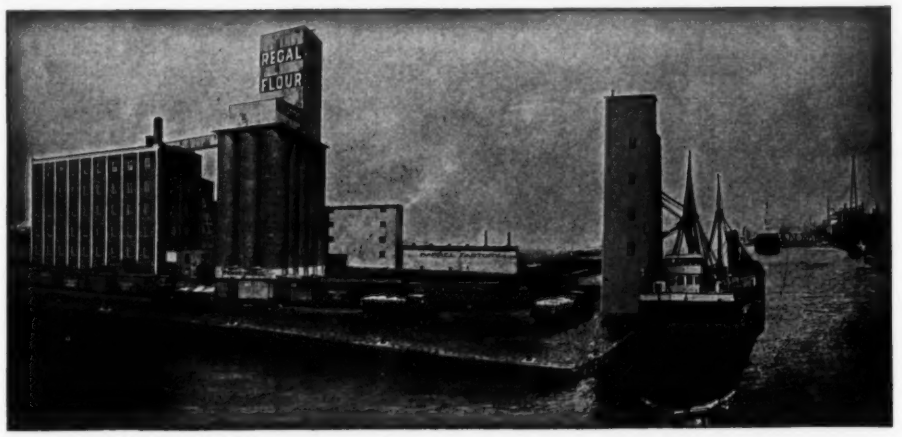
THE RED WING MILLING CO.
RED WING, MINNESOTA
Wheat Washed with Our Own Artesian Well Water.
Flour Tested and Baked in Our Own Laboratory.

The
CONSOLIDATED FLOUR MILLS CO.
KANSAS' LARGEST INDEPENDENT MILLERS
IN THE HEART OF KANSAS
CABLE ADDRESS "CONFLOMILS" USE ALL CODES
LONG DISTANCE TELEPHONES 221, 223, 224, 225
KANSAS BEST FLOUR
WICHITA
KANSAS
GIBRALTAR FLOUR

D. A. CAMPBELL, President T. WILLIAMSON, Vice President and Managing Director

The St. Lawrence Flour Mills Co., Ltd.

MONTREAL ● CANADA



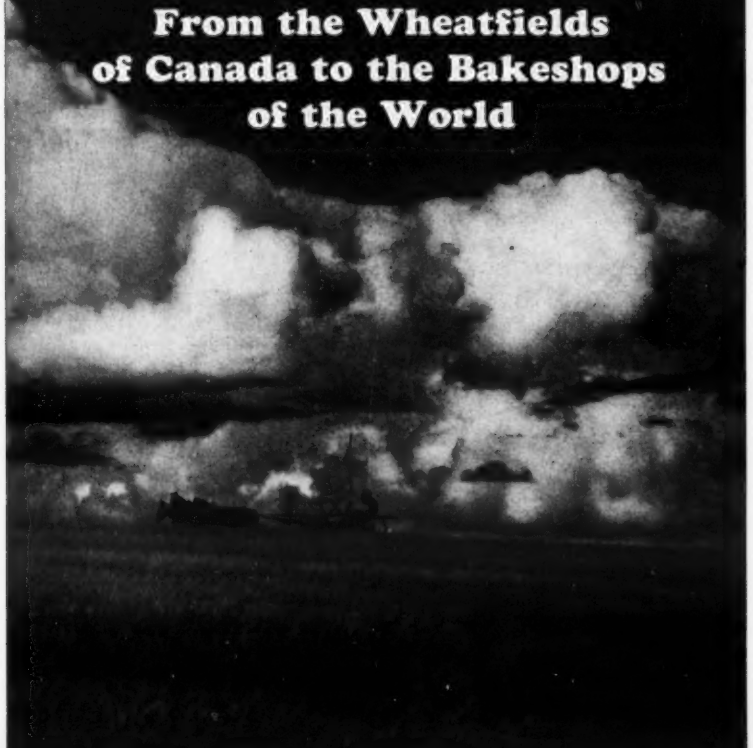
Millers of Canadian
Hard Wheat Flours

"Regal"
"Fleur de Lis"
"National"
"Daily Bread"
"Citadel"

3,000 barrels per day
Quality uniformly maintained for over 25 years

Robin Hood FLOUR

From the Wheatfields of Canada to the Bakeshops of the World



Robin Hood Flour Mills Limited

Millers of Western Canadian Spring Wheat
Flours - Rolled Oats - Oatmeal

Mills and Western Offices: Moose Jaw, Calgary, Saskatoon
Eastern Sales Offices: Montreal, Toronto, Moncton • *Oriental Export Sales:* Vancouver
Cable Address: "Robinhood" Montreal Codes: Riverside A B C 5th Edition & Private

SPILLERS LIMITED

◆ ◆

Millers of the
HIGHEST QUALITY FLOUR
and Manufacturers of
PROVENDER AND BALANCED RATIONS
FOR ALL CLASSES OF FARM STOCK

◆ ◆

Head Office:
40, St. Mary Axe, E. C. 3.
LONDON, ENGLAND

Cables:
"Milligroup"
London

Canadian Hard Spring Wheat
450 Elevators in Manitoba, Saskatchewan and Alberta.
High Test Country Run
United Grain Growers, Ltd.
Winnipeg, Manitoba

The ALBERTA PACIFIC GRAIN COMPANY LIMITED
372 Country Elevators
Terminal Elevator Capacity, 6,800,000 Bus.
Grain Exchange, Winnipeg

GILLESPIE BROS., Pty., Ltd.
FLOUR MILLERS
SYDNEY, N.S.W., AUSTRALIA
CABLE ADDRESS, "GILLESPIE," SYDNEY

R. C. PRATT
FLOUR—EXPORTER—CEREALS
68 KING ST. EAST
TORONTO, CANADA
Cable Address: "PRAMILLCO," Toronto.

FEEDSTUFFS
The feed man's weekly newspaper
$1.00 per year
118 South Sixth St. Minneapolis, Minn.
Published by The Northwestern Miller staff

Export Flour INSURANCE
"All Risks"
Special Service to Flour Mills on Export and Domestic Ocean and Lake Insurance and Transportation
Thirty-Five Years' Experience in Export Flour Handling
Western Assurance Company
TORONTO, CANADA
F. C. THOMPSON CO., LTD.
Canadian Agents
Royal Bank Bldg., Toronto, Canada
APPLETON & COX, INC.,
American Agents
111 John Street, New York

CANADA'S LARGEST FLOUR EXPORTERS

Head Office— Toronto, Ontario

Cable Address— "Mapleshaw," Toronto, Canada

PORT COLBORNE MILLS—CAPACITY 12,000 BBLS. DAILY

Maple Leaf Milling Co. Limited.

EXPORT OFFICES:
TORONTO NEW YORK VANCOUVER

MILLS AT
TORONTO, ONTARIO MEDICINE HAT, ALBERTA PORT COLBORNE, ONTARIO

THREE STARS

PURITY MANITOBA HARD WHEAT FLOURS BATTLE

Milled at
WINNIPEG, GODERICH, CALGARY
....*By*....

Western Canada Flour Mills Co., Limited

Head Office: TORONTO, CANADA

CABLE ADDRESS: "LAKURON"

Flour Milling Capacity, 9,000 Bbls. Daily Rolled Oats and Oatmeal, 400 Bbls.

THE MAIN LINK

WOODS MANUFACTURING CO., LTD.

MONTREAL - TORONTO - WINNIPEG

QUALITY UNIFORMLY MAINTAINED SINCE 1887

Lake of the Woods Milling Co., Limited

Cable Address
"HASTINGS'
Montreal

ALL
CABLE CODES
USED

Makers of CANADIAN HARD SPRING WHEAT *Flour*

Owning and Operating
Wheat-Receiving Elevators in Manitoba,
Saskatchewan and Alberta

Mills at
Brantford, Keewatin, Portage la Prairie,
Medicine Hat

HEAD OFFICE: MONTREAL WESTERN OFFICE: WINNIPEG

Offices:
TORONTO, OTTAWA, QUEBEC, ST. JOHN, N. B., HALIFAX, HAMILTON, BRANTFORD, SUDBURY, LONDON,
SAULT STE. MARIE, FORT WILLIAM, KEEWATIN, MEDICINE HAT, PORTAGE LA PRAIRIE,
CALGARY, MOOSE JAW, REGINA, EDMONTON, VANCOUVER, VICTORIA

JUTE BAGS COTTON

OLDEST ESTABLISHED MANUFACTURERS OF
JUTE **BAGS** COTTON
IN CANADA

Factories—MONTREAL - TORONTO

The CANADIAN BAG CO., Limited
Head Office: MONTREAL, QUEBEC

JUTE BAGS COTTON

GREAT STAR FLOUR MILLS, Ltd.
Successors to Wolverton Flour Mills Co., Ltd.
Canadian Spring and Winter Wheat Flour
"SILVERKING" "GREAT STAR" "WOLF" "KEYSTONE"
Cable Address: "WOLMACS" ST. MARY'S, ONTARIO, CANADA

LAKESIDE MILLING COMPANY, Ltd.
"BLOSSOM *of* CANADA" "YORK" "NORDIC"
Cable Address: LAKESIDE TORONTO, CANADA

Exporters of CANADIAN GRAIN *to World Markets*

EXPORT OFFICES:
MONTREAL
WINNIPEG
VANCOUVER

CABLE ADDRESS: "JAMESRICH"

GRAIN MERCHANTS IN CANADA
SINCE 1857

OWNERS AND OPERATORS OF TERMINAL AND COUNTRY ELEVATORS - CAPACITY 12,500,000 BUSHELS

WE INVITE YOUR ENQUIRIES

JAMES RICHARDSON & SONS LIMITED

CHOICEST CANADIAN *Hard Spring Wheat*

and perfect milling facilities have placed our products in the van.

BRANDS

"VICTORY" - "PRAIRIE BLOSSOM"
"WOODLAND" - - "HOMELAND"

THE DOMINION FLOUR MILLS, LTD.

Cable Address: "DOMFLOUR" MONTREAL, CANADA

Episode in Milling

(Continued from page 31.)

line. This compact was broken by the Vandalia line, which transported all the flour manufactured by the association for two years under a liberal schedule of rates. When the two years were up the railroads all agreed once more not to give the millers a better rate over any one line. This agreement was observed while it was being signed and no longer, for the Wabash contracted with the millers to carry their flour at 30c per 100 lbs to New York, and 35c to Boston, which was 5c under the regular rates.

A FREE-FOR-ALL CONFLICT

So it went in every section in which milling had gained importance, but the Minneapolis group was, for years, more successful in gaining these rate benefits than others. It was said that export rates on flour were lower from Minneapolis, Milwaukee and Chicago than from Buffalo. The Minneapolis millers also got the railroads to allow them free storage for their flour at Buffalo, which gave them an advantage of about 14c a barrel.

Under this ruling, the western millers were allowed to unload and store their flour at Buffalo, in their own warehouses, repacking if necessary, and then shiping to the great eastern consuming territories on a through rate from the mill that was materially lower than the sum of the two local rates. Utilizing this system, it was possible for the western millers to ship large quantities of flour by lake steamers during the summer months and then fill eastern orders from store at Buffalo on the through rate. In 1892, for example, they were said to have had 500,000 bbls of flour stored at Buffalo when navigation closed. It may be, therefore, that the decision of the railroads, in 1901, to withdraw the free storage privilege was an important factor in causing the Minneapolis companies to build milling plants at Buffalo. At any rate, the rapid and steady growth of Buffalo's milling capacity started soon afterward.

This period from about 1878 to 1900 was, it is obvious, a difficult one for the Buffalo millers. There were only ten milling companies in the city and at Niagara, and not all of these were large enough or progressive enough to be of much use in fighting the competition coming from the West. On a few matters, they organized to protect their interests, but, usually, each Buffalo miller had to meet the problem individually, sometimes skirmishing with each other as well as the invader. Schoellkopf & Mathews by this time had the largest capacity of any mill in the Buffalo area. Mr. Mathews was as successful in meeting the new merchandising competition as he had been, with his partners, in keeping pace with the changes in milling technic. With the growth of the firm, the staff had expanded, of course, and John Smith, the head miller, and W. D. Olmsted, Mr. Mathews' brother-in-law, had been admitted as partners. This allowed Mr. Mathews to devote most of his unusual energies to selling.

It so happened that one of his close friends at the time was agent in Buffalo for the New York Central. Working through this friend, and giving virtually all of his business to the New York Central, Mr. Mathews succeeded in obtaining such low rates to the New England territory that he not only held his own against the western mills, but sold a steadily increasing volume. Mr. Schoellkopf and the other partners were constantly in favor of expansion, and the firm controlled, altogether, a capacity of about 4,000 bbls daily, by far the largest in Buffalo until the Washburn Crosby mill was built there in 1903.

Another handicap to profitable milling in those early days was the speculation necessary. Millers had organized associations in many parts of the country to insure a steady supply of good milling wheat, but option trading came several years later. Hedging of flour sales was not practiced until rather late in the nineteenth century. Mr. Mathews was one of the first millers to use hedges to reduce the risk of fluctuating wheat values. To Jacob F. Schoellkopf, the senior partner, this was not reducing the risks of milling, but enhancing them.

As has been said, he took no active part in the management of the company, but kept a desk in the offices and was often there. One day he happened to see some records of dealings in wheat futures which Mr. Mathews had had with the Chicago Board of Trade. He immediately took his partner to task for this "gambling." Mr. Mathews explained the hedging theory in detail and with some pride, but still the old German did not comprehend it as a safety measure. Finally, after much explanation on the one side and misunderstanding on the other, Mr. Schoellkopf, in his thick accent, exclaimed:

"Vell, all right! Do it if you think you should. But I don't see how you stand on both sides of that fence at once!"

All of the Buffalo mills, however, did not adapt themselves to the changing modes of business as well as Schoellkopf & Mathews. Despite the advantages which Buffalo has as a milling location, many of the less efficient plants went out of business in the last 15 years of the nineteenth century. Only those companies that were headed by some man or men of unusual business talents survived and grew.

Mr. Smith died in 1896, Mr. Schoellkopf in 1899 and Arthur Schoellkopf in 1907. When Mr. Mathews retired shortly after the turn of the century, his brother, the late William D. Olmsted, then his nephews, George W. and John Olmsted, carried on the business—then called the Niagara Falls Milling Co.—until a few years ago.

FLOUR BRANDS

The following trade-marks have been published in the Official Gazette of the United States Patent Office preliminary to registration. Manufacturers and distributors who feel that they would be damaged by the registration of any of these marks are permitted by law to file, within 30 days after official publication of the marks, a formal notice of opposition.

ZIPFEST; Twin City Wholesale Grocer Co., St. Paul, Minn; cereal breakfast food. Use claimed since Sept. 15, 1941.

MOUNTAIN SPRING; Omar Incorporated, Omaha, Neb; wheat flour. Use claimed since July 26, 1941.

TRIPLE OH! Bertha Hutchings Parker, doing business as On-On-Or Food Co., Rochester, N. Y; bran muffin mix and corn muffin mix. Use claimed since Oct. 10, 1941.

DOLLY DIMPLE; Arkadelphia (Ark.) Milling Co., Inc; wheat flour. Use claimed since Aug. 15, 1941.

GOLD CROSS; Montana Flour Mills Co., Great Falls, Mont; wheat flour. Use claimed since May 23, 1913.

TELEGRAM; Colorado Milling & Elevator Co., doing business as Springfield Flour Mills, Denver, Colo., and Springfield, Mo; wheat flour. Use claimed since July 1, 1920.

BY APPOINTMENT TO HIS LATE MAJESTY KING GEORGE V.

Canada's oldest and largest Millers

BRANDS:

Flour
"ROYAL HOUSEHOLD"
"GLENORA"
"FAMOUS"
"BUFFALO"

Cereals
"OGILVIE OATS"
"WHEAT HEARTS"
"OGILVIE BLENDIES"

THE OGILVIE FLOUR MILLS COMPANY, LIMITED
HEAD OFFICE, MONTREAL, CANADA
Mills at:
Montreal, Fort William, Winnipeg, Edmonton and Medicine Hat
Cable Address: OGILVIE, MONTREAL. *All codes used.*

W. S. KIMPTON & SONS
Flour Millers
MELBOURNE, AUSTRALIA
Cables: "GLUTEN," Melbourne

MUNGO SCOTT, Pty., Ltd.
FLOUR MILLERS
Cable Address: "SUPERB" Established 1894
Summer Hill, Sydney, N.S.W., Australia

CANADIAN-BEMIS BAG COMPANY, LIMITED
WINNIPEG • VANCOUVER
Successors to
THE CANADIAN BAG CO. LIMITED OF WINNIPEG & VANCOUVER
and
BEMIS BRO. BAG COMPANY, WINNIPEG
Manufacturers and Importers
COTTON BAGS JUTE BAGS
BAG
BURLAPS AND TWINES
Paper Bags for Sugar, Cereals, etc., manufactured at Vancouver plant

Coast To Coast Grain Service

CARGILL
INCORPORATED

Minneapolis and
All Principal Grain Markets

WHEAT
WINTER
SPRING
DURUM
• • •
By the
TRUCK-LOAD
CAR-LOAD
BOAT-LOAD
• • •
Any Where
Any Time

WHEAT

Any Grade—Any Quantity—Any Time

BUNGE ELEVATOR CORPORATION
MINNEAPOLIS, MINN.

Van Dusen Harrington Co.

• *Grain Merchants* •

BUSINESS FOUNDED 1852

MINNEAPOLIS DULUTH

ARCHER-DANIELS-MIDLAND COMPANY
J. M. CHILTON, Mgr. Grain Dept.

GRAIN MERCHANTS
Milling Wheat and Coarse Grains
MINNEAPOLIS

MILWAUKEE, WIS.
BUFFALO, N. Y.
KANSAS CITY, MO.
ST. JOSEPH, MO.
OMAHA, NEB.
PORTLAND, ORE.
DULUTH, MINN.

Specialized Flour Service • A Flour for Every Purpose

CLEM L. BECKENBACH
DWIGHT BUILDING KANSAS CITY, MO.

Continental Grain Co. MILLING WHEAT FROM EVERY PRODUCING SECTION OF THE UNITED STATES

TERMINAL ELEVATORS
Chicago Omaha
St. Louis Toledo
Kansas City Portland

OFFICES
New York Columbus Omaha Chicago
Kansas City Davenport Portland Galveston
St. Louis Buffalo San Francisco Nashville

WE SOLICIT YOUR INQUIRIES

Export Flour Insured ALL RISKS by

The Sea Insurance Co., Ltd.
of LIVERPOOL

U. S. Branch Assets.....$4,904,187
Capital Deposited in U. S..... 500,000
Surplus for Protection of Policyholders..... 2,930,199

ORIGINATORS OF ALL RISKS
Insurance on Flour
Policies of this Company are
held by all leading millers

CHUBB & SON
United States Managers
90 John Street - - New York
Insurance Exchange - Chicago
Hurt Building - - Atlanta, Ga.
Royal Bank Building - - Montreal

GRIST OF GRINS

UP TO DATE

Said the Indian to the tourist: I am Brave Eagle. This is my son, Fighting Hawk, and my grandson, Low Wing Bomber.

GOOD IDEA

Cop—Hey, what are you doing there?
Irving Wallace—Parking my car. It seemed such a good place. The sign said: "Safety Zone."

EXECUTIVES

"My wife told me to ask you for a raise."
"All right. I'll ask my wife if I can give you one."

SERVICE

Pompous Diner—I'll have a portion of chicken. It must be from a Plymouth Rock cockerel, this year's bird, and nothing but a leg will do.
Waiter—Yes, sir. Right or left leg?

THERE'S A DIFERENCE

"So your son is in college? How is he making it?"
"He isn't making it. I'm making it and he's spending it."

ANYTHING YOU SAY

Gay Bird.—Waiter, I want to put this meal on the cuff.
Waiter.—Sure, pal, and I'll throw the whole thing in your lap if you say so.

NO CHANGE

"Back from your holiday, eh? Feel any change?"
"Not a penny."

PEACEMAKER

"What you running for?"
"Trying to stop a big fight."
"Who's fighting'?"
"Me and another guy."

UNFORTUNATE

Doctor.—It's most essential that you should refrain from doing head work during the next few weeks.
Patient.—Yes, doctor, but it's my living.
Doctor.—Oh, are you a scholar?
Patient.—No, I'm a barber.

IDLE

Captain, Field Artillery.—Is this gun working?
Private.—No, sir. It's discharged.

IT'S TOO HOT

Teacher.—What, Bobby, you say you wouldn't like to be President?
Bobby.—Not just now. If it's all the same to you, I'd rather wait until things cool down a bit.

ARNOLD
...of...
STERLING

Mills and Sells

"Thoro-Bread"
(Diastatically Balanced)

A very fine, strong, altogether uniform and dependable flour

ARNOLD MILLING CO.
STERLING, KANSAS

Igleheart Brothers, Inc.
Evansville, Indiana
MILLS STRATEGICALLY LOCATED IN THE CENTRAL WEST AND ON THE PACIFIC COAST
Cracker, Pastry, Cake, Doughnut, Cone, Cookie And All Other Special Flours

THE BUCKEYE CEREAL COMPANY
MANUFACTURERS OF
Hard and Soft Wheat Flours
Buckeye Balanced Ration Feeds
Massillon, Ohio

WHITE WHEAT
Low Protein Cake and Cookie Flours
AMENDT MILLING CO.
Monroe, Mich.

Hart-Bartlett-Sturtevant Grain Co., Inc.
Line country houses in five states
Terminal houses at Kansas City and St. Joseph
Kansas City, Mo.

We are always ready to fill your requirements of
MILLING WHEAT
MOORE-SEAVER GRAIN CO.
Operating Kansas City Southern Elevator Kansas City, Mo.

KELLY-ERICKSON CO.
Flour Brokers
OMAHA, NEB.
Offices:
New York City and San Francisco

TRIPLE XXX FINE GROUND
ALFALFA MEAL
Ideal for Poultry Mashes
THE DENVER ALFALFA MILLING & PRODUCTS CO.
Lamar, Colo. Merchants Exchange, St. Louis, Mo.

REPRESENTATIVE FLOUR IMPORTERS OF FOREIGN COUNTRIES

R. HUNTER CRAIG & CO., Ltd.

GLASGOW: 45, Hope Street, C.2. LIVERPOOL: Temporary War-time Address "Copley," Thornton Hough, Cheshire

LONDON—7, London Street, Mark Lane, E. C. 3.

M. STANNARD E. A. GREEN
Established 1870
STANNARD, COLLINS & CO.
FLOUR, GRAIN AND CEREAL PRODUCT IMPORTERS
Cory Buildings, Fenchurch Street LONDON, E. C. 3

Cable Address: "DORFEACH," London
MARDORF, PEACH & CO., Ltd.
FLOUR IMPORTERS
52, Mark Lane, LONDON, E. C. 3

COVENTRY, SHEPPARD & CO.
FLOUR IMPORTERS
17, Corn Exchange Chambers LONDON, E. C. 3
Cable Address: "COVENTRY," London

Cable Address: "TRONTOPRI," London
SIDNEY SMITH
(FLOUR, FEED & GRAIN, LTD.)
52 Mark Lane LONDON, E. C. 3
FLOUR, GRAIN, FEED, CORN AND CEREAL PRODUCTS
Codes: Riverside, A B C 5th Ed., also Bentley and Western Union 5 Letter Codes

C. E. FEAST & CO.
(CHAS. E. FEAST)
FLOUR IMPORTERS
Subscription Room Seething Lane, LONDON, E. C. 3
Cable Address "Feastanco," London.

PILLMAN & PHILLIPS
FLOUR IMPORTERS
LONDON, LIVERPOOL, BRISTOL, DUBLIN, BELFAST

HARRIS BROS. & CO. (Grain) Ltd.
COMMISSION AGENTS and FACTORS
GRAIN, SEEDS, OIL, FEEDINGSTUFFS and FLOUR
Corys' Buildings
57/59 St. Mary Axe LONDON, E. C. 3
9 Brunswick Street LIVERPOOL
68 Constitution Street LEITH
81 Hope Street GLASGOW

ROSS T. SMYTH & CO., LTD.
FLOUR AND GRAIN IMPORTERS
LIVERPOOL, LONDON, HULL, BRISTOL, GLASGOW, BELFAST
NEW YORK OFFICE:
PAUL, ROBSON & CO., Produce Exchange

FENNELL, SPENCE & CO.
IMPORTERS OF GRAIN, FLOUR, LINSEED AND COTTONSEED PRODUCTS, FEED, ETC.
20, Chapel Street, LIVERPOOL, ENG.
Cable Address: "FENNELL," Liverpool

JAMES ALLEN & CO., (Belfast) Ltd.
FLOUR AND CEREAL PRODUCT IMPORTERS
Ulster Bank Chambers, 73 May Street BELFAST, IRELAND
Cable Address: "ANCHOR," Belfast

ANDREW LAW WILLIAM R. LAW
CRAWFORD & LAW
FLOUR IMPORTERS
50 Wellington Street GLASGOW
and at 17, Corn Exchange Chambers LONDON, E. C. 3
Cable Address: "CAMELLIA," Glasgow

WILLIAM MORRISON & SON
LTD.
FLOUR IMPORTERS
Baltic Chambers
50 Wellington Street GLASGOW
Cable Address: "WAVERLEY"

Established 1895
OTTO MADSEN
FLOUR IMPORTERS
COPENHAGEN, DENMARK
Cable Address: "OTTOMADSEN" Samples and offers solicited

D. T. RUSSELL & BAIRD, Ltd.
45 Hope Street GLASGOW
IMPORTERS OF
FLOUR, OATMEALS, CEREALS
OFFICES ALSO AT
LIVERPOOL LEITH
DUBLIN BELFAST

FARQUHAR BROTHERS
FLOUR MERCHANTS
50 Wellington Street GLASGOW, C. 2
C. I. F. business much preferred.
Cable Address: "GLENCAIRN," Glasgow

ANDREW TAYLOR & CO.
(GLASGOW) LTD.
FLOUR IMPORTERS
163, Hope Street, GLASGOW
Cable Address: "GOLDENGLO," Glasgow

McCONNELL & REID, LTD.
FLOUR IMPORTERS
19 Waterloo St. GLASGOW
Cable Address: "MARVEL," Glasgow

ROBERT CARSON & CO.
LTD.
FLOUR IMPORTERS
50 Wellington St. GLASGOW
Cable Address: "DIPLOMA," Glasgow

ARCHD. HAMILTON & SONS
IMPORTERS OF FLOUR, OATMEAL AND FEEDINGSTUFFS
81 Hope Street GLASGOW, C. 2
Cable Address: "ROSLIN," Glasgow

WATSON & PHILIP, LTD.
FLOUR IMPORTERS
155 Wallace St., GLASGOW, C. 5
41 Constitution St., LEITH
Esplanade Buildings, DUNDEE
42 Regent Quay, ABERDEEN
Cables: "PHILIP," Dundee

GEBROEDERS VREESWIJK
FLOUR IMPORTERS
UTRECHT, HOLLAND
Cable Address: "MEDIUM," Utrecht

LØKEN & CO. A/S
Established 1871 OSLO, NORWAY
Working Norway, Finland, Denmark and Sweden
Reference:
Chase National Bank of the City of New York, New York
Midland Bank, Ltd., Poultry & Princes St., London

S. LUND
P. O. Box 626 Cables: "LUNEX"
OSLO, NORWAY
GRAIN - FLOUR
AGENCIES WANTED

Established 1899
NORENBERG & BELSHEIM
NILS G. NIELSEN, Sole Proprietor
FLOUR SPECIALISTS
OSLO, NORWAY
Cable Address: "COSMO" and "MOBIL"

FLORELIUS & ULSTEEN A/S
Established 1913
OSLO, NORWAY
FLOUR - SEMOLINA - FEED
Working Denmark, Finland, Norway, Sweden
Cable Address: "FLORMEL," Oslo

Low Grades and Millfeed
I. S. JOSEPH CO., INC.
Minneapolis, Minn.

Johnson-Herbert & Co.
FLOUR
444 W. Grand Ave. CHICAGO

We are always in the Market for Hard and Soft Wheat Flours
GENERAL BAKING COMPANY
420 Lexington Ave. NEW YORK CITY

S. R. STRISIK CO.
Flour Mill Agents
Produce Exchange NEW YORK

ANALYSES
FLOUR—CEREAL—GRAIN
Dependable, Prompt Service
Siebel Institute of Technology
960 Montana CHICAGO, Ill.

FLOUR
Broker and Merchandiser
DAVID COLEMAN, Incorporated
Members N. Y. Produce Exchange
Produce Ex. - NEW YORK
New England Office: 211 Bryant St., Malden, Mass.

H. J. GREENBANK & COMPANY
FLOUR
PRODUCE EXCHANGE NEW YORK, N. Y.

KNIGHTON
FOR FLOUR
NEW YORK BOSTON
PHILADELPHIA

HABEL, ARMBRUSTER & LARSEN CO.
All **FLOUR** Grades
410-420 N. Western Ave.., CHICAGO, ILL.

Dixie-Portland Flour Co.
Memphis, Tennessee
Standard of the South plus Dependable Service

John E. Koerner & Co., Inc.
DOMESTIC EXPORT
FLOUR
P. O. Box 646 781 LASALLE ST.
NEW ORLEANS, U. S. A.

Flour Specialists Quality and Price Flour
M. S. Brownold Company
Successors to D. G. Van Dusen & Co.
Produce Exchange NEW YORK

KELLY *Flour Co.*
DOMESTIC *Merchandisers* EXPORT
AMERICA FORE BLDG.
844 Rush St. CHICAGO

THE FRANK R. PRINA CORPORATION
Domestic **FLOUR** Export
LIVE WIRES—CONNECT!
Produce Exchange NEW YORK

WHITE & COMPANY
"The Flour People"
117 Commerce St. Baltimore, Md.

HUBERT J. HORAN
FOREIGN **FLOUR** DOMESTIC
322-324 Bourse PHILADELPHIA, PA.

INDEX·OF·ADVERTISERS

"A" series of page numbers used to index advertisements appearing in Section Two of this issue.

Acme-Evans Co., Indianapolis, Ind. 18
Acme Flour Mills Co., Oklahoma City, Okla. 23
Akron Belting Co., Akron, Ohio 12a
Alberta Pacific Grain Co., Ltd., Winnipeg, Man. 42
Allen, James, & Co. (Belfast), Ltd., Belfast, Ireland 47
Alva Roller Mills, Alva, Okla.
Amber Milling Co., Minneapolis 27
Amendt Milling Co., Monroe, Mich. 46
American Bakers Machinery Co., St. Louis, Mo.
American Cyanamid & Chemical Corp., New York, N. Y.
American Dry Milk Institute, Inc., Chicago, Ill.
American Machine & Foundry Co., New York, N. Y.
Ames Harris Neville Co., Portland, Oregon, San Francisco, Cal. 31
Anheuser-Busch, Inc., St. Louis, Mo.
Appraisal Service Co., Inc., Minneapolis. 16a
Archer-Daniels-Midland Co., Minneapolis 46
Arkansas City Flour Mills Co., Arkansas City, Kansas 30
Arnold Milling Co., Sterling, Kansas. 46
Atkinson Milling Co., Minneapolis 8

Baltic Co., Copenhagen, Denmark.
Barnett & Record Co., Minneapolis. 20a
Baur Flour Mills Co., St. Louis, Mo.
Baxter, A. E., Engineering Co., Buffalo. 20a
Bay State Milling Co., Winona, Minn. 41
Beckenbach, Clem L., Kansas City, Mo. 46
Bemis Bro. Bag Co., Minneapolis, St. Louis, etc. 15a
Bernheimer, Harry N., Philadelphia, Pa.
Black Bros. Flour Mills, Wymore, Neb. 18
Blair Milling Co., Atchison, Kansas. 31
Blake, J. H., New York, N. Y.
Blodgett, Frank H., Inc., Janesville, Wis. 26
Boonville (Mo.) Mills Co.
Bowersock M. & P. Co., Lawrence, Kan. 30
Brey & Sharpless, Philadelphia, Pa.
Broenniman Co., Inc., New York, N. Y.
Brownold, M. S., Co., New York, N. Y. 47
Brown's Hungarian Corp., New York
Buckeye Cereal Co., Massillon, Ohio. 46
Buhler Mill & Elevator Co., Buhler, Kansas 40
Bunge Elevator Corp., Minneapolis. 46

Cameron, John F., & Co., Aberdeen, Scotland
Canadian Bag Co., Ltd., Montreal, Toronto 44
Canadian-Bemis Bag Co., Ltd., Winnipeg, Vancouver 45
Canadian Mill & Elevator Co., El Reno, Okla. 30
Cannon Valley Milling Co., Minneapolis. 40
Capital Flour Mills, Inc., St. Paul, Minn. 8
Cargill, Inc., Minneapolis. 46
Carson, Robert, & Co., Ltd., Glasgow. 47
Centennial Flouring Mills Co., Seattle. 31
Central Bag & Burlap Co., Chicago, Ill. 13a
Chandler, Arthur L., St. Louis, Mo. 11a
Chase Bag Company—New York; Chicago; Philadelphia; Buffalo; Chagrin Falls, Ohio; Toledo; Goshen, Ind; Milwaukee; Minneapolis; Kansas City; St. Louis; Dallas; New Orleans; Reidsville, N. C; Portland, Oregon. 17
Chatfield & Woods Sack Co., Cincinnati. 20a
Checkerboard Elevator Co., St. Louis. 11a
Chelsea Milling Co., Chelsea, Mich. 40
Chicago & Illinois Midland Railway Co. 31
Chicago, South Shore & South Bend Railroad, Chicago, Ill.
Chickasha Milling Co., Chickasha, Okla. 40
Chubb & Son, New York, N. Y. 46
Coatsworth & Cooper, Toronto, Can.
Colborne Mfg. Co., Chicago, Ill.
Coleman, David, Inc., New York 47
Collins Flour Mills, Inc., Pendleton, Oregon
Colorado Milling & Elevator Co., Denver, Colo. 5
Columbia Chemical Division, New York, N. Y. 13a
Columbus Laboratories, Chicago, Ill. 20a
Commander Milling Co., Minneapolis.
Commander-Larabee M. Co., Minneapolis 31
Commercial Milling Co., Detroit, Mich. 27
Consolidated Flour Mills Co., Wichita, Kansas 41
Continental Grain Co., Kansas City, Mo. 46
Corn Products Sales Co., New York.
Coventry, Sheppard & Co., London, England 47
Craig, R. Hunter, & Co., Ltd., Glasgow, Scotland 47
Crawford & Law, Glasgow, Scotland. 47
Cream of Wheat Corp., Minneapolis. 23
Crookston Milling Co., Crookston, Minn. 26
Crown Mills, Portland, Oregon. 31
Cuban Flour Review, Havana, Cuba.

Dairymen's League Co-operative Association, Inc., New York, N. Y.
Davis-Noland-Merrill Grain Co., Kansas City, Mo. 2
Day Co., Minneapolis, Minn. 13a
De Lisser, Andrew, New York, N. Y.
De Stefano, Ulysses, New York, N. Y.
Denver Alfalfa Milling & Products Co., Lamar, Colo., St. Louis, Mo. 46
Deutsch & Sickert Co., Milwaukee, Wis.
DeWitt Hotels
Diamond Crystal Salt Co., Inc. 22a
Dickinson, W. V., New York.
Dixie-Portland Flour Co., Memphis, Tenn. 47
Dobry Flour Mills, Inc., Yukon, Okla.
Dominion Flour Mills, Ltd., Montreal. 44
Doughnut Corporation of America, New York, N. Y.
Dow Chemical Co., Midland, Mich. 6a
Duluth Universal Milling Co., Duluth. 23
Dunwoody Institute, Minneapolis, Minn.

Eagle Roller Mill Co., New Ulm, Minn. 8
Eckhart, B. A., Milling Co., Chicago. 14a
Enns Milling Co., Inman, Kansas. 40
Enrights All-o-The-Wheat Flour Co., St. Paul, Minn.
Essmueller Co., St. Louis and Kansas City, Mo. 20a
Evans Milling Co., Indianapolis, Ind. 30

Farquhar Bros., Glasgow, Scotland. 47
Farmers & Merchants Milling Co., Glencoe, Minn. 8
Farwell & Rhines Co., Watertown, N. Y. 18
Feast, C. E., & Co., London, England. 47
Federal Mill, Inc., Lockport, N. Y. 27
Fennell, Spence & Co., Liverpool, Eng. 47
Finger Lakes and Hudson Flour Mills, Inc., Geneva, N. Y. 18
First National Bank in St. Louis. 22
Fisher & Fallgatter, Waupaca, Wis. 31
Fisher Flouring Mills Co., Seattle, Wash. 31
Florelius & Uisteen, A/S, Oslo, Norway. 47
Flour Mills of America, Inc., Kansas City, Mo. 4
Food Research Laboratories, Inc., Long Island City, N. Y. 39
Foods, Inc., Jersey City, N. J.
Forster Mfg. Co., Inc., Wichita, Kansas. 2a, 23a
Fort Garry Flour Mills Co., Ltd., Montreal, Que.
Fort Morgan Mills, Fort Morgan, Colo.
Franco, Francis M., New York, N. Y.
Fulton Bag & Cotton Mills, Atlanta, Dallas, New York, New Orleans, St. Louis, Minneapolis, Kansas City, Kan. 16a

Gallatin Valley Milling Co., Belgrade, Mont.
Garland Milling Co., Greensburg, Ind.
General Baking Co., New York, N. Y. 47
General Mill Equipment Co., Kansas City, Mo. 22a
General Mills, Inc., Minneapolis. Cover 4
Gillespie Bros., Ltd., Sydney, N. S. W. 42
Globe Milling Co., Watertown, Wis. 19
Goerz Flour Mills Co., Newton, Kansas. 18
Goethel, Alfred C., Co., Milwaukee, Wis.
Gooch Milling & Elevator Co., Lincoln, Neb. 23
Goodhue Mill Co., Minneapolis.
Great Star Flour Mills, Ltd., St. Mary's, Ont. 44
Greenbank, H. J., & Co., New York. 47

Haaky Mfg. Co., St. Paul, Minn. 20a
Habel, Armbruster & Larsen Co., Chicago, Ill. 47
Hamilton, Archibald, & Sons, Glasgow. 47
Hamm, J. M. & C. M., London, England.
Hardesty Milling Co., Dover, Ohio. 30
Harris Bros. & Co., Ltd., London, England 47
Hart-Bartlett-Sturtevant Grain Co., Inc., Kansas City, Mo. 46
Hart-Carter Co., Minneapolis, Minn. 24a
Heide, Henry, Inc., New York
Hoffmann-La Roche, Inc., Nutley, N. J. 9a
Holland Engraving Co., Kansas City. 30
Horan, Hubert J., Philadelphia, Pa. 47
Horner & Wyatt, Kansas City, Mo. 22a
Howie, The J. K., Co., Minneapolis. 20a
Hubbard Milling Co., Mankato, Minn. 30
Hunter Milling Co., Wellington, Kansas. 40

Igleheart Bros., Inc., Evansville, Ind. 46
Imbs, J. F., Milling Co., St. Louis. 27
Innis, Speiden & Co., New York, N. Y. 21a
International Milling Co., Minneapolis. Cover 2
Ismert-Hincke Milling Co., Kansas City, Mo. 31

Jaeger, Frank, Milling Co., Danville (P. O., Astico), Wis.
Jennison, W. J., Co., Minneapolis. 30
Jewell, L. R., & Son, Kansas City, Mo.
Johansen, Anth., & Co., Oslo, Norway.
Johnson-Herbert & Co., Chicago, Ill. 47
Jones-Hettelsater Construction Co., Kansas City, Mo. 22a
Joseph, I. S., Co., Inc., Minneapolis. 47

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Kansas Flour Mills Co., Kansas City, Mo.
Kansas Milling Co., Wichita, Kansas. 11a
Kelly-Erickson Co., Omaha, Neb. 46
Kelly Flour Co., Chicago, Ill. 47
Kelly, William, Milling Co., Hutchinson, Kansas 19
Kent, Percy, Bag Co., Inc., Kansas City, Mo. 12a
Kimpton, W. S., & Sons, Melbourne, Australia 45
King, H. H., Flour Mills Co., Minneapolis, Minn. 26
King Midas Flour Mills, Minneapolis, Minn. 30
King Milling Co., Lowell, Mich. 8
Kipp-Kelly, Ltd., Winnipeg, Man.
Knighton, Samuel, & Sons, Inc., New York, N. Y. 47
Koerner, John E., & Co., New Orleans, La. 47

Laboratory of Vitamin Technology, Chicago, Ill. 8
La Grange Mills, Red Wing, Minn. 23
Lake of the Woods Milling Co., Ltd., Montreal, Que. 44
Lakeside Milling Co., Ltd., Toronto, Can. 44
Larabee Flour Mills Co., Kansas City, Mo.
Lee, H. D., Flour Mills Co., Salina, Kansas 30
Lever Bros. Co., Cambridge, Mass.
Lexington Mill & Elevator Co., Lexington, Neb.
Löken & Co., A/S, Oslo, Norway. 47
Long, W. E., Co., Chicago, Ill. 22
Lund, S., Oslo, Norway. 47
Lyon & Greenleaf Co., Ligonier, Ind. 40
Lysle, J. C., Milling Co., Leavenworth, Kansas 18

McConnell & Reid, Ltd., Glasgow, Scotland 47
McCormick Co., Inc., Pittsburgh.
McKinnon & McDonald, Ltd., Glasgow, Scotland
Madsen, Otto, Copenhagen, Denmark. 47
Mann, F. W., East St. Louis, Ill.
Maple Leaf Milling Co., Ltd., Toronto, Ont., Can. 43
Mardorf, Peach & Co., London, England 47
Marsh & McLennan, Minneapolis. 8
Marsh & McLennan, Inc., New York.
Meelunie, N.V. Alg. Handel en Industrie Mij., Amsterdam, Holland
Mennel Milling Co., Toledo, Ohio.
Merck & Co., Rahway, N. J. 5a
Mid-Kansas Milling Co., Clay Center, Kansas
Midland Chemical Laboratories, Inc., Dubuque, Iowa 13a
Midland Flour Milling Co., Kansas City, Mo.
Mid-West Laboratories Co., Columbus, Ohio 20a
Mill Mutual Fire Prevention Bureau, Chicago 11a
Miner-Hillard Milling Co., Wilkes-Barre, Pa. 18
Minot Flour Mill Co., Minot, N. D. 23
Monsanto Chemical Co., St. Louis, Mo.
Montana Flour Mills Co., Great Falls. 8
Moore-Lowry Flour Mills Co., Kansas City, Mo. 30
Moore-Seaver Grain Co., Kansas City. 46
Morris, Cliff H., & Co., Inc., New York.
Morrison Milling Co., Denton, Texas. 40
Morrison, Wm., & Son, Ltd., Glasgow, Scotland 47
Moundridge Milling Co., Moundridge, Kansas 40

National Grain Yeast Corp., Belleville, N. J.
National Milling Co., Minneapolis.
Neahr, M. J., & Co., Chicago, Ill.
Nebraska Consolidated Mills Co., Omaha, Neb. 18
Neill, Robert, Ltd., Glasgow, Scotland.
New Century Co., Chicago, Ill.
New Era Milling Co., Arkansas City, Kansas 2
New Jersey Flour Mills Co., Clifton, N. J.
Newton Milling & Elevator Co., Newton, Kansas 23
New Ulm Roller Mill Co., New Ulm, Minn. 40
Norenberg & Beisheim, Oslo, Norway. 47
Northern States Power Co., Minneapolis. 12a
Northwestern Elevator & Mill Co., Toledo, Ohio 23
Northwestern National Bank & Trust Co., Minneapolis, Minn.
Norton, Willis, Co., Wichita, Kansas. 8
Nor-Vell Sieve Co., Kansas City, Mo. 20a
Novadel-Agene Corp. Cover 3

Ogilvie Flour Mills Co., Ltd., Montreal, Que. 45
Old Fashioned Millers, Inc., St. Paul, Minn.
Osieck & Co., Amsterdam, Holland.

Page, Thomas, Mill Co., Topeka, Kansas 30
Paniplus Company, Kansas City, Mo.
Parrish & Heimbecker, Ltd., Winnipeg, Man.
Pearlstone, H. S., New York, N. Y.
Peek Bros., Little Rock, Ark.
Petersen Oven Co., Chicago.
Pfeffer Milling Co., Lebanon, Ill. 27
Pillman & Phillips, London, England. 47
Pillsbury Flour Mills Co., Minneapolis. 1
Pratt, R. C., Toronto, Ont. 42
Preston-Shaffer Milling Co., Waitsburg, Wash. 31
Prina, Frank R., Corp., New York. 47
Procter & Gamble, Cincinnati, Ohio.

Quaker Oats Company, St. Joseph, Mo. 31

Rapid River Milling Co., Rapid City, S. D.
Red River Milling Co., Fergus Falls, Minn. 40
Red Star Yeast & Products Co., Milwaukee, Wis.
Red Wing Milling Co., Red Wing, Minn. 41
Richardson, James, & Sons, Ltd., Winnipeg, Man. 44
Richmond Mfg. Co., Lockport, N. Y. 19a
Riegel Paper Corp., New York, N. Y.
Robin Hood Flour Mills, Ltd., Moose Jaw, Sask. 42
Robinson Milling Co., Salina, Kansas. 19
Robinson, Thomas, & Son, Ltd., Rochdale, England 17a
Rodney Milling Co., Kansas City, Mo. 27
Ross Milling Co., Ottawa, Kansas. 30
Russell, D. T., & Baird, Ltd., Glasgow, Scotland 47
Russell-Miller Milling Co., Minneapolis, Minn. 18
Russell Milling Co., Russell, Kansas. 40

St. Cloud Milling Co., St. Cloud, Minn. 40
St. Joseph (Mo.) Testing Laboratories, Inc. 11a
St. Lawrence Flour Mills Co., Ltd., Montreal, Canada 42
Sandusky Cooperage & Lumber Co., St. Louis, Mo.
Saxony Mills, St. Louis, Mo. 40
Schultz, Baujan & Co., Beardstown, Ill. 23
Scott, Mungo, Ltd., Sydney, N. S. W., Australia 45
Scren-Kleen, Inc., Minneapolis, Minn. 21a
Security Flour Mills Co., Abilene, Kansas 30
Shellabarger Mills, Salina, Kansas. 30
Sheridan Flouring Mills, Inc., Sheridan, Wyo. 23
Shevelove, J. J., Newark, N. J.
Short, J. R., Milling Co., Chicago, Ill.
Siebel Institute of Technology, Chicago. 47
Simonds-Shields-Theis Grain Co., Kansas City, Mo. 2
Singer Sewing Machine Co., New York, N. Y.
Smith, Sidney, Flour, Feed & Grain, Ltd., London, Eng. 47
Smyth, Ross T., & Co., Ltd., London, England 47
Spillers, Ltd., London, England. 42
Spindler, L. G., New York.
Springfield (Minn.) Milling Corp. 8
Stanard-Tilton Milling Co., St. Louis.
Standard Brands, Inc., New York, N. Y.
Standard Milling Co., Chicago, Ill. 23
Stannard, Collins & Co., London, Eng. 47
Stratton Grain Co., Milwaukee, Wis.
Strisik, S. R., Co., New York. 47
Superior Separator Co., Minneapolis, Minn. 22a
Swift & Co., Chicago

Tanner-Duncan-Siney Corp., New York, N. Y.
Taylor, Andrew, & Co. (Glasgow), Ltd., Glasgow, Scotland 47
Tennant & Hoyt Co., Lake City, Minn. 18
Thomas, A. Vaughan, London, England.
Thompson, E. S., New York City.
Tobler, Ernst & Traber, Inc., New York, N. Y. 7a
Tri-State Milling Co., Rapid City, S. D.
Twin City Machine Co., Minneapolis, Minn. 11a

Uhlmann Grain Co., Kansas City, Mo., and Chicago, Ill. 19a
United Grain Growers, Ltd., Winnipeg, Man. 42
Urban, George, Milling Co., Buffalo. 26

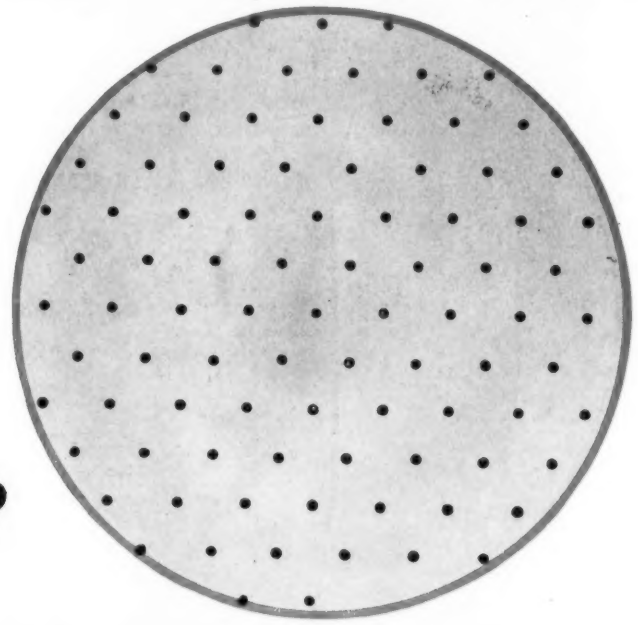
Valier & Spies Milling Company, St. Louis, Mo. 4
Van Dusen Harrington Co., Minneapolis and Duluth, Minn. 46
Victor Chemical Works, Chicago, Ill. 3
Virginia-Carolina Chemical Corp., Richmond, Va.
Voigt Milling Co., Grand Rapids, Mich. 27
Vreeswijk, Gebroeders, Utrecht, Holland 47

Wabasha Roller Mill Co., Wabasha, Minn. 26
Wall-Rogalsky Milling Co., McPherson, Kansas 27
Wallace & Tiernan Co., Inc., Newark, N. J. Cover 3
Walnut Creek Milling Co., Great Bend, Kansas 22
Wamego Milling Co., Wamego, Kansas.
Wasco Warehouse Milling Co., The Dalles, Oregon 31
Watson & Philip, Ltd., Dundee, Scotland 47
Watson Higgins Milling Co., Grand Rapids, Mich. 30
Weber Flour Mills Co., Salina, Kansas. 6
Weevil-Cide Co., The, Kansas City, Mo. 22a
Wesson Oil & Snowdrift Sales Co., Chicago, Ill.
Western Assurance Co., Toronto, Ont. 42
Western Canada Flour Mills Co., Ltd., Toronto, Ont. 43
Western Milling Co., Pendleton, Oregon. 31
Western Star Mill Co., Salina, Kansas.
Western Waterproofing Co., St. Louis and Kansas City, Mo. 22a
White & Co., Baltimore, Md. 47
Whitewater Flour Mills Co., Whitewater, Kansas 30
Wichita (Kansas) Flour Mills Co. 27
Williams Bros. Co., Kent, Ohio. 30
Winthrop Chemical Co., Inc., New York, N. Y.
Wisconsin Milling Co., Menomonie, Wis. 18
Wolf Milling Co., Ellinwood, Kansas. 31
Woods Mfg. Co., Ltd., Montreal, Que. 43

Zeleny Thermometer Company, Chicago, Illinois 20a

Quiz

WHAT'S THE LONGEST DISTANCE— BETWEEN 2 POINTS?

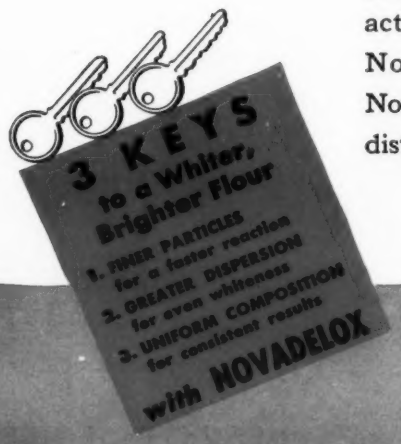


The shorter your answer the more it favors NOVADELOX

Novadelox particles average some four times smaller (in diameter) than the flour particles in which they are incorporated. More than this, however, the physical characteristics of Novadelox minimize cohesion between individual particles — there is no tendency to lump or segregate.

When fed into the flour by equipment specifically developed for a product of these characteristics (the W&T Novadelox Feeder) Novadelox is uniformly distributed in intimate contact with the flour. *The longest distance between any two "points" of Novadelox in the flour is still sufficiently short to get efficient and uniform whitening action of all of the flour, all of the time.*

Novadelox acts with predictable effectiveness and rapidity (whitening action is complete within 24 hours). It will give your flour a color and brilliance that is a delight to the buyer's eye. And if you consider the latitude it allows you in blending a wide variety of wheats, and the costly hazardous storage it helps to eliminate, you'll find Novadelox a money-saver as well as a sales-builder. NA 70


3 KEYS
to a Whiter, Brighter Flour
1. FINER PARTICLES for a faster reaction
2. GREATER DISPERSION for even whiteness
3. UNIFORM COMPOSITION for consistent results
with NOVADELOX

NOVADEL-AGENE

Agents: WALLACE & TIERNAN CO., INC., Belleville, N. J.

AGENE FOR MATURING

NOVADEL FOR COLOR

LET'S GO! U.S.A. KEEP 'EM FLYING!

The real yardstick is VALUE

AND YOUR GENERAL MILLS MAN OFFERS MORE

"How much should I pay for flour?"

An important question at any time—especially important now with everything advancing in price. Especially important with the present emergency demanding the utmost efficiency in every operation. Especially important with the possibility of radical adjustments definitely in the picture—adjustments that may suddenly strip away "the frills" and leave each baked product to stand or fall on its own merits.

That means quality . . . the kind of quality that comes only from the best of raw materials properly processed, efficiently converted into finished foods.

General Mills' flours are milled with but one thought in mind—*your finished product*. That's the reason for our careful and extensive annual Wheat Survey, our far flung storage facilities, our constant and careful test bakes, our absolute insistence that quality . . . and quality in terms of your finished product . . . must be *in* the bag before the price goes *on*.

How much should you pay for flour? Important—yes—but . . .

How much do you get for your money in terms of what you have to sell . . . your finished product?

That's the true measure of flour value.

GENERAL MILLS, INC.

MINNEAPOLIS, MINNESOTA

PRODUCTS CONTROL

TRADE NAMES:

El Reno (Okla.) Mill & Elevator Co.
General Mills, Inc. Southeastern Bakery Sales Office, Atlanta, Ga.
Great West Mill & Elevator Company, Amarillo, Texas
Kell Mill & Elevator Company, Vernon, Tex.
Oklahoma City (Okla.) Mill & Elevator Co.
Perry (Okla.) Mill & Elevator Company
Red Star Milling Company, Wichita, Kansas
Royal Milling Company, Great Falls, Montana
Sperry Flour Company, San Francisco, Calif.
Washburn Crosby Co., Buffalo, N. Y.
Washburn Crosby Company, Chicago, Ill.
Wichita Mill & Elevator Company, Wichita Falls, Tex.